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F. H. SHEPARD

CHILDREN'S HARMONY

NEW YORK
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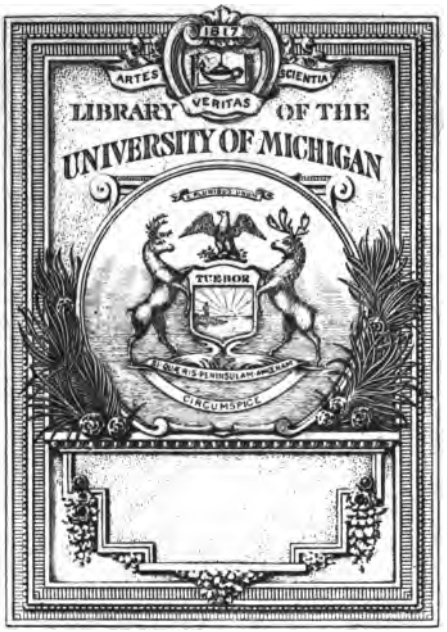
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CHILDREN'S HARMONY

TREATING OF

SCALES, KEYS, INTERVALS, SIMPLE CHORDS, AND CHORD-CONNECTIONS

AND THE

TRAINING OF THE PERCEPTIVE POWERS

ADAPTED TO THE NEEDS OF

YOUNG PIANO-STUDENTS

AND FOR THE

FIRST STUDIES IN HARMONY

BEING PART I

OF

HARMONY SIMPLIFIED

BY

F. H. SHEPARD

AUTHOR OF "HOW TO MODULATE," "PIANO-TOUCH AND SCALES," AND "CHURCH-MUSIC AND CHOIR-TRAINING."

NEW YORK

G. SCHIRMER

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PREFACE.

The need of a work on the Theory of Music which should be adapted to the requirements of young students is universally acknowledged. It is attempted, in the present volume, to supply sufficient Theory for the large number of Piano students who are unable to take an extended course in Harmony, and to supply a first book in Harmony, which shall be simple and thorough, as far as it goes, without being childish.

An important feature of the work is that the pupil is led to develop for himself examples of any subject which may be under consideration,— *to learn by doing;* and an extremely large number of exercises leads to facility in the use of harmonic materials.

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The book aims at the following distinct objects:— I. To treat the subjects of Scales, Keys, Signatures, and Intervals so thoroughly that the pupil will be prepared to understand with ease the principles of chord-construction.— II. To present the subject of Chord-Construction in such a manner that the pupil will be obliged to form all chords himself, thus deriving a practical knowledge of the subject.—III. To discard all arbitrary rules. Instead of blindly struggling with a mass of contradictory rules, the pupil is made acquainted with the original principles from which the rules are derived, and his judgment cultivated to apply them with discretion.— IV. A course in the development of the Perceptive Faculties, or the power of hearing accurately, is given by means of exercises in Dictation. This training enables a pupil to listen intelligently to music, to distinguish between the different chords, to recognize melodies, and to write, in musical notation, what he hears.

A number of exercises by Jadassohn and by Richter are included in this book.

ORANGE, NEW JERSEY; Jan., 1896.

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PART I.

CHAPTER I.

SCALES: SIGNATURES: KEYS: CIRCLE OF KEYS: HISTORICAL: THE PERCEPTIVE FACULTIES.

Construction of the Major Scale.

1. A *Major Scale* is a succession of eight tones, placed at a distance of either a *Whole* or a *Half*-step apart.

A *Half-step* or *Semitone*, is the smallest interval formed upon the Piano-keyboard; that is, from any key to the next one, white or black; e. g., C to D♭: E to F: A♯ to B, etc.

A *Whole Step* is a step as large as two Half-steps; e. g., C to D: E to F♯: G♯ to A♯: B♭ to C.

2. The eight notes of a scale are called *Degrees* of the scale, and are numbered from the lowest, or Keynote, upward to the octave of the keynote.

3. Notice, when playing the scale of C on the Piano, that from the 3rd to the 4th degree, and from the 7th to the 8th, are *half*-steps, while between all the other degrees are *whole* steps. *This forms our rule for the construction of any Major scale*, (also called Diatonic* Major scale,) *without regard to the starting-place.* Therefore, we will write the succession of figures, indicating the position of the half-steps by the sign ‿, thus making a *Formula*, or general pattern, by which we can construct a scale starting from *any* note; thus:—

1 2 3‿4 5 6 7‿8. Briefly expressed for memorizing, this formula is as follows:—

The *Half*-steps are from 3 to 4 and from 7 to 8.
All other steps are *Whole* steps.

4. To illustrate this formula, let us begin on the note G, and, following the above rule, form a scale:—

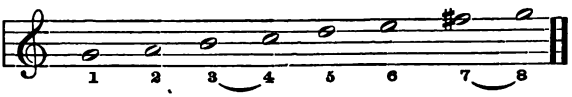
G A B C D E F G.
1 2 3‿4 5 6 7‿8. Let us examine this step by step, comparing the notes with the formula:—

1 to 2 should be a whole step, i. e., G to A — is right.
2 to 3 should be a whole step, i. e., A to B — is right.
3 to 4 should be a half-step, i. e., B to C — is right.
4 to 5 should be a whole step, i. e., C to D — is right.
5 to 6 should be a whole step, i. e., D to E — is right.
6 to 7 should be a whole step, i. e., E to F — is wrong, since E to F is only a *half*-step, where a *whole* step is required. To correct this, F♯ is used instead of F, giving the proper distance from 6. 7 to 8 should be a half-step,

* The word *Diatonic* means literally "through all the tones." Its applied meaning is, that one (and only one) note is to be written upon each degree of the staff. It will be seen later that the word is also used to refer to *scale-notes*, to distinguish them from notes altered by accidentals. (See § 44.)

i. e., F♯ to G — is right. (The F♯ really corrects two faults, as without it the step 7 to 8 would have been too great.) Expressed in notes with the formula, the corrected scale reads as follows:—

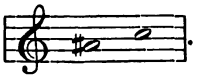
Fig. 1.



In this way the pupil should test each note in the following exercises.

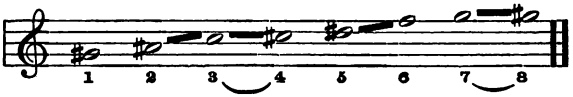
5. In constructing scales, observe the following points:

I. Do not write two notes upon the same degree of the staff; e. g., A and A♯.

II. Do not skip any letter; e. g.,  . (The letter B is skipped.)

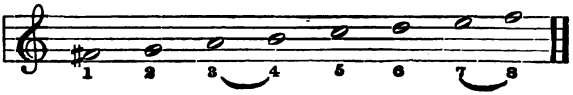
NOTE. The word Scale is derived from *Scala*, meaning "ladder." The lines and spaces are used *consecutively* to form a regular series of steps, ascending or descending. If two notes should be written upon one degree of the staff (e. g., I), it would be necessary to omit the note on the next degree (e. g., II) to make up for it. Such a method would make a very irregular looking scale or ladder; e. g.,

Fig. 2.



III. To avoid the errors mentioned in I and II the beginner should always first make a *skeleton*, or outline, of the desired scale, i. e., the notes only, without sharps or flats, writing the formula of figures underneath. Afterwards he may bring it to the required standard of steps and half-steps by using sharps or flats. For example:—

Fig. 3



The next step is to "write in" the sharps necessary to make the notes correspond with the formula; thus:

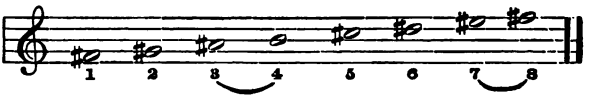
1 to 2 should be a whole step; a whole step from F♯ is G♯: therefore, write a sharp before G.

2 to 3 should be a whole step; a whole step from G♯ is A♯: write a sharp before A.

3 to 4 should be a *half*-step; a half-step from A♯ is B—is right.

Proceed in this manner till the scale is completed, resulting as shown in Fig. 4.

Fig. 4.



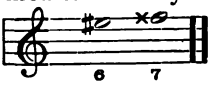
Exercises.

6. (*a.*) Construct the Skeleton and Formula, and write Major scales starting from the following notes: C; G; D; A; E; B; F♯; C♯.

(*b.*) Construct the same scales at the keyboard.

Double Sharps.

7. Write the scale of G♯ as above. N. B. It will be observed that the step 6 to 7, from E♯ a *whole* step upward, is not properly expressed by simply writing F♯, as that is only a *half*-step from E♯. It is here necessary to raise the F♯ *another* half-step, to make the required distance from E♯, which is done by using a *double* sharp, written x, giving



Exercises.

Write the scales of D♯, A♯, E♯, and B♯, using double sharps where necessary. Repeat at keyboard.

The Use of Flats.

8. Flats are introduced where without them notes would be a half-step too high. For example, in the scale starting upon F, (write it,) the interval from 3 to 4 is a whole step, while the formula requires a half-step.

This is rectified by the use of a flat before B.

Exercises.

Write the scales of F, B♭, E♭, A♭, D♭, G♭, and C♭. Repeat at keyboard.

Double Flats.

9. In the following scales, double flats, written ♭♭, will be required. From the foregoing, the pupil should be able to find the reasons without further explanation.

Exercises.

Write the scales of F♭, B♭♭, E♭♭, A♭♭, and D♭♭. Repeat at keyboard.

Advanced Course.

10. From a consideration of the above it will be seen, that in one sense there is but *one* Major scale. The so-called various scales, F, D, C♯, B♭, etc., are but *exact reproductions of each other*, varying only in pitch. The name of the scale, therefore, merely indicates the name of the starting-note or Keynote. There is a popular idea among Piano-pupils that the scale of C Major, having no black keys, is the one perfect scale. But it will be at once seen that the Major scales are all alike in the manner of construction, the black keys upon the Piano simply serving to bring all the notes of the scale into proper relationship with each other, i. e., at the proper distance from each other. For example, it should not be said that there is a wide difference between the scale of C and the scale of D♭, because one has no flats and the other so many. Rather should it be said, that these five flats serve to make the two scales alike, by keeping the series of steps and half-steps absolutely the same.

Keys.

Regular Course.

11. After writing a few scales as above indicated, the

pupil will understand that the notes of the scale bear a certain relationship to each other. The starting-point of each scale is termed the Keynote; the group of tones composing the scale, considered collectively, is called a Key.

Signatures.

12. *Exercises.* (*a.*) Returning to the exercises in §§ 6 and 8, the pupil will gather the sharps or flats used in constructing each scale, and place them in a group immediately after the clef, thus forming the Signature of the key.

Signatures are a *result* of this uniform construction of the scale, and not the cause or origin of the various keys.

(*b.*) Recite the order of sharps in signatures.

(*c.*) Recite the order of flats in signatures.

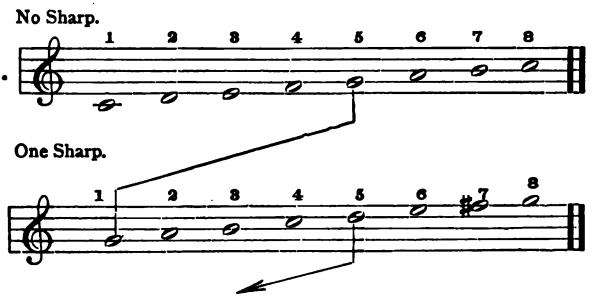
Circle of Keys with Sharps.

13. In forming the key-signatures as above, notice:—

(*a.*) That each successive scale has one more sharp than the one before it; e. g., C has no sharps, G has one sharp, D two, A three, etc.

14. (*b.*) That the note on the 5th degree of one scale is used as the first note of the next scale; e. g.,

Fig. 5.

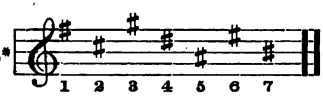


15. (*c.*) This succession continues till the note B♯ is reached. This note being the same as C natural, we may be said to have completed the Circle of Keys, starting from

C and continuing till the same note (though called B♯) is reached. This is called the Circle with Sharps.

16. (*d.*) The sharps or flats of a signature are always written in the order in which they successively appear in the Circle of Keys; e. g., F♯ being the first to appear, is always written first,—at the left,—no matter how many sharps there may be in the signature. C♯, being second, always comes next to F♯ in any signature. Written in order, and numbered, they appear as in Fig. 6.

Fig. 6.*



Notice, also, that if a certain signature has one sharp, that sharp will be the one at the left in Fig. 6. If a signature has two sharps, they will be the two at the left in Fig. 6. And no matter how many there are, those at the left will always be included. To learn the order in which the *flats* appear, observe the order of their entrance in the illustrations and exercises in §§ 19–22.

17. (*e.*) It may be especially noticed, not only that the note upon the 5th degree is used as a starting-point for the succeeding new scale, but that the *last half* of one scale (four notes) is used as the first half of the next new one; e. g., Fig. 5. (See also §§ 32 and 45.)

18. (*f.*) But one note (or letter) is altered in passing from one scale to the next in succession. *This altered note is always on the 7th degree*, and is shown by the added sharp appearing in the Signature.**

---

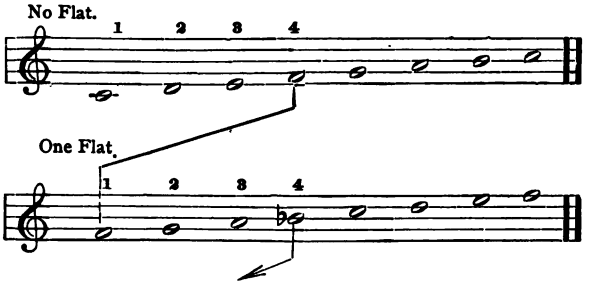
* This order will be observed by reference to the entrance of each successive new sharp in the Exercises, § 6.

** This fact may be used to find the Key indicated by any signature: The last new sharp being always at the right in the signature, we may say that *the right-hand sharp is always on the 7th degree of the scale.* And, knowing the 7th degree, we may easily find the 8th degree or Keynote. (N. B. The octave of the keynote is the same as the keynote itself.)

Circle of Keys with Flats; Circle of Fourths.

19. A Circle of Keys using a gradually increasing number of *flats*, can also be formed, by using the 4th degree of each scale as the starting-note (keynote) of the next one; e. g.,

Fig. 7.



Exercises.

20. Write out the Circle of Keys with flats, using double flats where necessary.

21. It will be noticed that whereas in the Circle with sharps the last half of each scale forms the first half of the next, in flats this is reversed, the first half of one becoming the last half of the next. (To understand this, write it out in notes.) The pupil will further notice, that the added or new flat will appear each time upon the 4th degree.*

22. In the Circle of Keys with sharps, the 5th note of the scale is used as the Keynote of the following scale. In the Circle with flats, the 4th note is so used. Now, counting four notes of the scale upward reaches the same note as counting five notes downward.** Therefore, these circles are called the *Circle of Fifths*, the sharps counting

* Therefore, to recognize any key with flat signature, notice that the right-hand flat is on the fourth degree of the scale; and to find the 1st degree or key-note, count downward from 4 to 1.

** In finding the fifth below, do not count 1, 2, 3, 4, 5; but, instead, count 5, 4, 3, 2, 1, remembering to keep the half-step between 4 and 3, in order to preserve the correct form in the new scale.

upward, i. e., by *ascending* Fifths, and the flats downward, i. e., by *descending* Fifths.

23. These circles may be represented as follows, the figures opposite each key indicating the number of sharps or flats in the scale:—

Fig. 8.
Read around to the right.

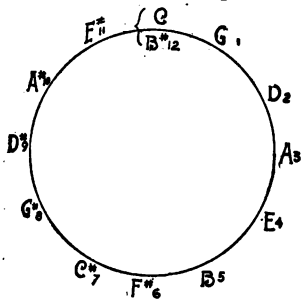
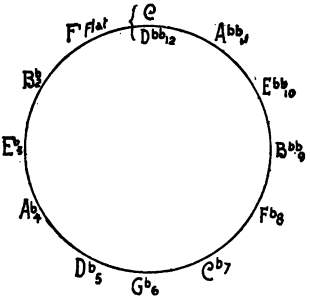


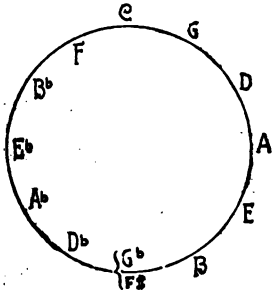
Fig. 9.
Read around to the left.



N. B. In finding the above number of sharps or flats in a scale, remember that a Double sharp counts the same as two single sharps.

24. As the keys having more than six sharps or six flats are unnecessarily complicated in notation, it is customary to use the sharp keys for the first half of the circle, from C to F♯, and the flat keys to complete the round; e. g., Fig. 10.

Fig. 10.
Read to right or left.



In this way the change is usually made from F♯ to G♭, or vice versa; though it *may* be made at *any point in the circle*, e. g., from G♯ to A♭, from F♭ to E, etc., and is called an *Enharmonic* change of key. See §78.

Advanced Course.

25. There is an interesting way of learning the *number of sharps* in a scale where there are more than six: It will be seen at a glance that the key of C has no sharps, and the key of C♯ has seven sharps. In other words, each of the seven notes has been raised by a sharp. Similarly, if the key of G has one sharp, the key of G♯ will have $1+7=8$, since each one of the notes in its scale must be raised to change the key from G to G♯. Similarly, the key of D having two sharps, the key of D♯ will have $2+7=9$. Similarly, the key of A having three sharps, the key of A♯ will have $3+7=10$. Therefore, to find how many sharps there are in a key when the Keynote is written with a sharp, simply add 7 to the number of sharps in the signature of the key of the *same letter* without the sharp.

26. The same principle applies to flat keys having more than six flats; e. g., B♭ has two flats; therefore B♭♭ will have $2+7=9$ flats.

27. Another interesting point in this connection may here be developed: —

In the Circles of Fifths in §§ 13–24, the circle began each time with the key of C. This is not at all necessary, it being quite as easy to begin upon *any other* note and complete the circle back to that note again, proceeding in either direction.

Let the pupil begin upon G♭ and form the circle by ascending fifths. This will decrease the number of flats by one each time till C is reached, after which sharps will appear and increase successively. Vice versa, a circle can be constructed beginning upon F♯ and progressing by *descending* fifths. Notice that in both cases the succession passes through the key of C and changes from flats to sharps, or vice versa, without altering the conditions in the least.

28. From this it will be seen that Flats and Sharps, in their relation to each other, are like degrees above and below Zero on the thermometer, sharps being above and flats below the zero-mark. Or they might be compared to Positive and Negative quantities in Algebra.

Keyboard and Written Exercises.

Form examples of the above-mentioned circles, starting in turn from C♯, D, D♯, E, F, F♯, G, G♯, A, A♯, and B, progressing first by *ascending* fifths, and afterward by descending fifths.

29. Resulting from the relationship of sharps and flats, keys are frequently compared with respect to their relative "sharpness," the key having the fewest flats or the most sharps being called the sharpest key. Or they may be placed in order, thus:—

C♭ G♭ D♭ A♭ E♭ B♭ F C G D A E B F♯ C♯
7 6 5 4 3 2 1 0 1 2 3 4 5 6 7, and compared by saying

that one key is so many "*removes*" to the right (i. e., sharper) or left (i. e., flatter) from another key, counting through the key of C regardless of differences; e. g., G is two removes to the right from F, or B♭ is four removes to the left from D. (See Weitzmann's "Musical Theory," page 90.) In a similar way the notes themselves may be compared, saying that D is a sharper note than G, since its key is represented by one more sharp, etc. This point is further noticed in § 250.

Exercises.

Compare the sharpness of the following keys,— i. e., tell how many degrees or "removes" from the first to the second in each pair, and state which is the sharper of the two:—

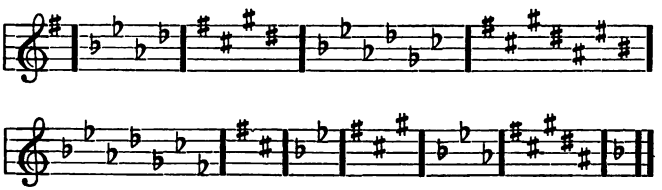
Keys of A and B; A and D; B and F♯; A♭ and D; B♭ and A♯; C and B♯; G♭ and A♭; D♭ and E♭; G♯ and A♭; F and G♮; G and A; A and B; B and C.

Exercises.

Regular Course.

30. By means of the statements in foot-notes to §§ 18 and 21, the pupil should be able to recognize at sight any key from its signature:—

What keys are represented by the following signatures?—



31. It is also desirable to know the number of sharps or flats in the signature of a given key, without reference to a table.

Exercises.

Give the number of sharps or flats in the signatures of the following keys: A, D♭, G, B♭, A♭, D, B, F♯, G♭, E♭, E.

N. B. If necessary to do so, write out each scale to find the number of sharps or flats.

Related Keys.

32. Keys having most notes in common are said to be *related* to each other. In the Circle of Fifths, each key is related particularly to the one before it, since one half of it is found in that scale; and also to the one following, since the other half will be found in that one (see § 45), e. g., the key of C is related to the key of G; also to the key of F. This subject will be developed further. (See §§ 17 and 334.)

Exercises.

Name the two keys related to the key of B: of F♯: of D: of A♯: of E♭: of A: of G♭: E: D♯.

Facility in Distinguishing the Various Degrees of a Key by Number and by Name.

33. To thoroughly prepare himself for the subsequent chapters, the pupil should learn to recognize at a glance the various degrees of any scale, and indicate them by number or by name.

Keyboard and Mental Exercises.

Placing any desired scale before the pupils (for example, the scale of B♭), the teacher should ask various questions like the following:—

Which degree of the scale is E♭? *Ans.* 4th degree.
Which degree of the scale is G? *Ans.* 6th degree.
Which degree of the scale is D? *Ans.* 3d degree.

This exercise should be carried through various keys, and continued till some proficiency has been gained. The exercise may be varied by such questions as the following:—

What is the 2nd degree in the scale of A major? *Ans.* B.

What is the 3rd degree in E major? *Ans.* G♯.

Specific Names.

(*To be learned.*)

34. Each Degree of the scale has also a Specific name, which is often used instead of the number, as follows:—

1st degree, **Tonic.**
2d degree, **Supertonic.**
3d degree, **Mediant.** (Meaning midway between Tonic and Dominant.)
4th degree, **Subdominant.**
5th degree, **Dominant.**
6th degree, **Submediant.** (Midway between Tonic and Subdominant, when the latter is written *below* the former.)
7th degree, **Subtonic or Leading-Tone.**
8th degree, **Octave or Tonic.**

Mental Exercises.

Apply test-questions, as shown in § 33.

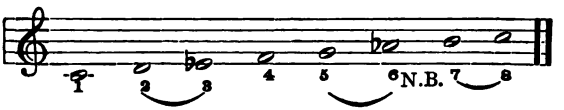
Notice that the prefix "Sub" means "below," and "Super," "above:" e. g., Supertonic means the degree above the Tonic, and Subtonic the degree below the Tonic.

The Tonic, Dominant, Subdominant, and Leading-note are especially important to know, and the pupil *should be able to find them without hesitation in any key.*

The Minor Scale.

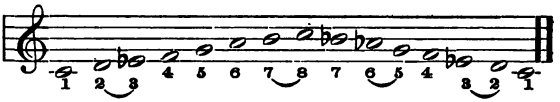
35. It was noticed that in the Major Scale the half-steps occur from 3 to 4, and from 7 to 8. The Minor Scale is formed by placing the half-steps between 2 and 3, 5 and 6, 7 and 8.

Fig. 11.



This is called the *Harmonic* Minor Scale, to distinguish it from the *Melodic* Minor Scale, which has a different and irregular arrangement of the half-steps, as shown in Figure 12. (See also § 46.)

Fig. 12.



36. The Harmonic Minor Scale is the basis of the chords in the Minor Mode,* while the Melodic Minor Scale is generally used in melodies. It may be considered as a "free" form of the Harmonic scale, made necessary by the fact that the interval of 1½ steps from 6 to 7 in the Harmonic Minor Scale (see Fig. 11) is rather unmelodious, though not unmusical.

37. From the foregoing comparison of the Major and Minor scales, the pupil will realize that *the character of a scale depends upon the position of the half-steps.*

Exercises.

38. Form Harmonic Minor scales, and write the figures under each note as shown in Fig. 11, starting from the following notes: A, E, B, F♯, C♯, G♯, D♯, D, G, C, F, B♭, E♭, A♭, D♭.

Relative Minor.

39. Every Major scale has what is called its "Relative Minor," which is the Minor scale having most notes in common with it, and having the *same signature.* This Relative Minor is always founded (has its keynote, or Tonic) on the *sixth degree of the Major scale.* Thus,

* The words "Major Mode" and "Minor Mode" are terms used when we do not refer to any particular key, but wish to speak of the character of Major or Minor in a general way.

the sixth degree in the scale of C is A; therefore, the Relative Minor of C Major is the scale (or key) of A Minor. (In finding a relative minor, it may be easier for the pupil to look for the keynote 1½ steps below rather than the sixth above, the result being the same.)

Exercises.

Find the Relative Minor (and write the proper signature) of C Major; of G, D, A, E, and B Major; of F, B♭, E♭, A♭, D♭ Major.

40. Correlatively, each Minor has its Relative Major, which is found on the third degree of the Minor scale. For example, the relative major of A Minor is C Major. In other words, A Minor is the relative Minor of C Major; and C Major is the relative Major of A Minor.

Mental Exercises and Drill.

Find the Relative Majors of the following Minor scales: A, E, B, F♯, C♯, G♯, D♯, D, G, C, F, B♭, E♭, A♭, D♭.

Signatures in Minor.

41. The pupil will notice that the Relative Minor of any Major scale has the same notes as the latter, excepting the seventh degree, which is raised by an accidental. For example, A Minor has the same notes as C Major, excepting the G♯. This accidental raising of the seventh degree is caused by the fact that the seventh degree, or "Leading-tone," should be only a half-step distant from the Tonic. (See § 46.)

In collecting the sharps or flats to form the signature of a minor key, this fact should be considered:— *The accidental found before the seventh degree does not belong to the signature.*

Exercises.

Write the signatures of the following Minor keys, proceeding as directed in § 12: A, E, B, F♯, C♯, G♯. D♯, D, G, C, F, B♭, E♭.

The Circle of Keys in Minor.

42. The Circle of Fifths can be made with Minor keys as well as with Major.

Exercises.

(*a.*) Form the Circle with sharps, beginning with the key of A Minor.

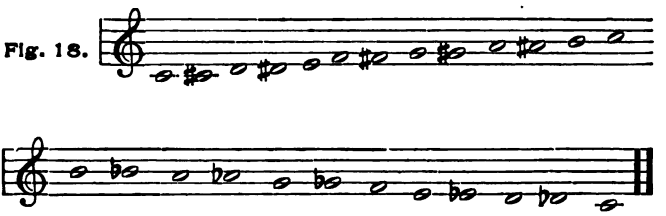
(*b.*) Form the Circle with flats, beginning with the key of A Minor.

(*c.*) Form the Circle beginning upon various other notes.

The Chromatic Scale.

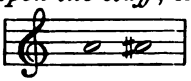
43. When the half-steps lying between the notes of the Diatonic scales are included, thus producing a scale of half-steps exclusively, it is called a Chromatic scale. It is customary to use sharps in writing the intermediate half-steps in an ascending chromatic scale, and flats in the descending scale; e. g.,

Fig. 18.



Chromatic Alteration.

44. When a note is raised or lowered a half-step by

an accidental, consequently *without changing its position upon the staff*, it is said to be chromatically altered; e. g., 

A *Chromatic* Half-Step is one expressed upon *one* degree of the staff; e. g., A — A♯.

A *Diatonic* Half-Step is one expressed upon *two* degrees of the staff; e. g., A — B♭.

In general, a Diatonic progression is one where the *letter is changed* in the succession of notes; and a Chromatic progression is one where the *letter is not changed*, but altered by the use of an accidental.

At the close of each chapter the pupil should make a synopsis of the principal facts contained therein, classifying and arranging them in order. The following table is intended to assist the pupil in this.

Synopsis of Chapter I.

- **Scales:**
  - **Major:**
    - Formula:— Half-steps 3–4 and 7–8.
    - Keys.
    - Signatures.
    - Circle of Fifths:
      - Ascending.
      - Descending.
    - Relative Keys:
      - Fifth above, or Dominant.
      - Fifth below, or Subdominant.
      - Relative Minor.
    - Specific Names.
    - Major scales all alike.
  - **Minor:**
    - Formula:
      - Harmonic; Half-steps, 2–3, 5–6, 7–8.
      - Melodic; Half-steps, up, 2–3, 7–8: down, 6–5, 3–2.
    - Relative Major.
    - Signatures:
      - Same as Relative Major.
      - Omit sign of raised Leading-note.
    - Leading-note raised by an accidental.
  - **Chromatic:**
    - Position of half-steps.
    - Notation.

Historical.

45. The Modern Scale is a gradual development from the ancient Greek Modes, in which the semitones occupied varying places in the scale, according to the mode. See Grove's "Dictionary of Music;" Vol. II, p. 341, and Baker's "New Dictionary of Musical Terms;" p. 88 *et seq*. The Major Scale may be considered as composed of two Tetrachords,* placed one above another; e. g.,

C D E F G A B C

Tetrachord. Tetrachord.

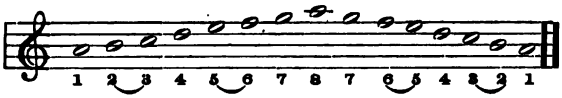
Until the 13th century, the use and influence of the semitones in Music were not fully realized; therefore, in the music previous to that time, we find (according to modern standards) a lack of Tonal feeling, or sense of being in some particular key. In the time of Palestrina it became customary to *sing* the seventh degree as if it were only a half-step from the eighth, although this was contrary to the notation, showing the need of something beyond the scales then in use.

In the seventeenth century the modern scale began to displace the Gregorian Modes; the sharps and flats, instead of being dispersed through the composition or left to the discretion of the performer, were gathered together to form the signature; the dividing lines between the keys were thus more distinctly marked; and Modern Music, as opposed to the Ancient Modes, soon made a distinct place for itself.

46. The oldest form of the Minor scale was as shown in Fig. 14.

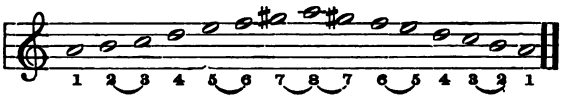
* A Tetrachord is a scale of four notes, having one half-step. Tetrachords belonged to the musical system of the ancient Greeks.

Fig. 14.



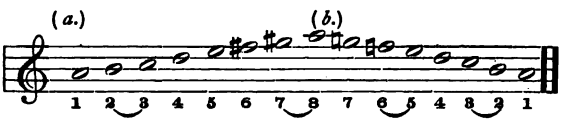
As the feeling of Tonality developed, a "Leading-note" was demanded which should point more decidedly toward the Keynote, and thus impart a greater feeling of satisfaction when the final chord was reached.* Thus the 7th degree of the scale was raised by an accidental, giving the form as in Fig. 15, which is seen to be our present Harmonic Minor scale.

Fig. 15.



This form leaves an interval of 1½ steps between the 6th and 7th degrees; and for the sake of a smoother effect it became customary to raise the 6th degree also a half-step, where the harmony would allow it, giving the form shown at (*a*), Fig. 16, which is our present Melodic Minor scale.

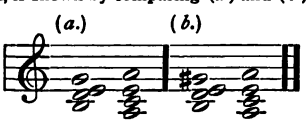
Fig. 16.



A "Leading-note" being unnecessary in a descending scale, the two notes raised by accidentals in the

* The need of a "Leading-note" to give the feeling of satisfaction when the final chord is reached, is shown by comparing (*a*) and (*b*) in Fig. 17.

Fig. 17.



ascending scale are usually restored in descending [(*b*), Fig. 16], giving the complete Melodic minor scale now used.

Exercises in Musical Dictation, for the Development of the Perceptive Faculties.

47. If we would rightly understand Music, it is indispensable that we become able to recognize what we hear, just as we recognize printed words upon first sight.

The reason so few have the faculty of listening intelligently, is not that it is difficult, but because little or no attention has been paid to this most important subject. Briefly summed up, the steps of the process of development consist in gaining the power: —

1. To distinguish Half-steps from Whole-steps.
2. To distinguish the various notes of the scale.
3. To distinguish Intervals.
4. To distinguish the Major from the Minor Mode.
5. To distinguish Chords and their inversions, and to realize their position in the key.
6. To trace simple Modulations.
7. To distinguish the Divisions of Time, Rhythm, etc.
8. To note the various features of Form, learning to recognize Motives, Themes, succession of keys, Periods, and the general plan of construction.
9. To be able to express all of the above in Musical Notation. *

By taking this study step by step, and in connection with the study of Harmony, there will be added interest in the latter by reason of the ability to apply each point as soon as learned. There will also be a deeper and more practical comprehension of Harmony, and a more intelligent knowledge of Music as an Art and a Science.

To Distinguish Notes of the Scale.

48. (*a*.) First teach the pupils, by experiment and careful concentration in listening, to distinguish between Half and Whole steps in both upward and downward progression. This may occupy parts of six or eight lessons.

(*b*). The best and only really successful manner of teaching the notes of the scale and how to distinguish them, is through the medium of the voice. The foundation of the musical perceptions lies in the possession of a "working" knowledge of the Major scale. The first

* The above represents the complete process, facility in all of which is attained only by gifted minds. But a moderate degree of proficiency is within the reach of any one possessed of ordinary perserverance.

step is therefore to thoroughly practise singing the major scale, using the syllables Doh, Ray, Me, Fah, Soh, Lah, Te, Doh'.* This should be continued till the pupils can skip from any degree to any other, and can also recognize the same when sung or played by the teacher.

(*c.*) In connection with the above, the teacher should sing, or play the ascending and descending scale, while the class, provided with a book of score-paper, write each note as it is sung. During this exercise (of writing, or *musical dictation*) the teacher should frequently ask, " What was the last note sung ?" requiring as an answer the name of the syllable, Doh, Ray, etc.

49. (*d.*) The scale may now be broken up; for example, going up a few notes and coming down part way; then going up a little further, etc., taking care to have all the progressions diatonic, — i. e., no skips, and no notes altered by accidentals. (The pupils should write these notes as sung or played.)

(*e.*) Afterward, simple skips (3ds, 4ths, and 5ths) may be interspersed, always keeping enough of the diatonic progression to retain the feeling of tonality, and taking care to increase the difficulty very gradually.

These exercises must be practised thoroughly, in order to lay the foundation for the more difficult subsequent studies. The keys in which these dictation-exercises are written, should be frequently changed during a lesson, that all keys may become familiar. It is not necessary that the teacher should play in a different key when the change is made. He may simply say, striking any note on the Piano: " This note is Doh : write in the key of ——," After a time he may say: " Now write in the key of ——' mentioning any key he may desire. Thus the pupils will become able to express themselves in one key as easily as in another, and will realize that the great point is the *relationship* of the sounds rather than the actual notes.

50. Although the ability to sing any succession of tones may not appear very requisite for the first exercises, it will be found in the subsequent studies in recognizing chords, modulations, etc., that the highest possible development of this power is of great advantage. Therefore, the practice of singing the scale and skipping about in it should be continued for some time. A diagram like Fig. 18, written on a wall-chart, is best for the first practice.

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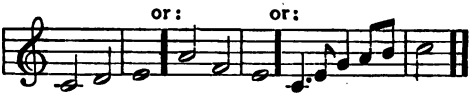
* The use of syllables is helpful in establishing the relationship of the various notes to each other.

Fig. 18.

Fah'
Me'
Ray'
DOH'
TE
LAH
SOH
FAH
ME
RAY
DOH
Te,
Lah,
Soh,

51. Besides practice in singing different tones, the pupil should be exercised in *thinking* how a succession of notes would sound. For example, taking a short succession like

Fig. 19.



the pupil should, by remembering the syllabic names of the notes and the sounds connected with those names, try to think how the passage would sound, afterward comparing with the effect when sung or played.

52. While exercising the pupil on Pitch, studies in Rhythm should be given, by means of notes of various lengths, successions of notes with rhythmic flow, etc. Rests should also be introduced. The inexperienced will find material for such exercises in any book on Sight-singing or Musical Dictation.

Specimen Test Questions.

Illustrating the Drill which should be given at the end of each chapter.

Additional questions may be obtained (free) from the author, at Orange, N. J.

1. Where are Half steps in the Major Scale? State two or three foundation principles covering its construction.

2. For what are Sharps and Flats used? * Also Double Sharps, and Double Flats?

3. How many *kinds* of Major scales are there, and why?

4. What is a Signature? * Give its origin. *

5. Describe Tetrachords and their office in the Order of Keys. *

6. Give the Order of Scales with Sharps. Also with Flats.

* But few reach the underlying thought in these questions.

7. What is the difference between a Scale and a Key ? *

8. What is the difference between the Harmonic and Melodic Minor ?

9. Name the Keys related to G Major and give reasons therefor.

10. How would you discover a key from the Signature in Sharps or Flats ?

11. What is the Signature of any Minor Key ?

12. What is the office of the Half-step in scale construction ? *

13. Why is there an accidental in every Harmonic Minor scale ?

14. Was it there originally ?

15. How would you change a Major to a Minor key, or vice versa ? *

16. What do you understand by the term "Tonality"? How is it developed, and how does it differ from "Key" ? *

NOTE. The more obvious questions are here omitted, but should be included by the teacher, and possibly used to "lead up to" these questions.

NOTE. The author has recently introduced into his own work a system of Daily Drill upon each subject as it is completed in the course of study. The suggestion, it is hoped, will prove of as great value to others as it has proved in his own experience. A specimen drill may be obtained as above.

CHAPTER II.

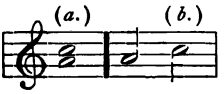
INTERVALS.

SPECIAL NOTE. — On taking up this subject, it is well to observe that it is divided into four general sections, which at first are studied rather independently of one another, viz.: The Names of Intervals; the Specific Names; Inversions; and Consonant and Dissonant. Try to keep these four lines of study distinct in the mind.

* These questions are designed to stimulate original thought.

53. An Interval in Music is like an interval anywhere else, — it is an expression of *distance* between two things. Consequently, it may be defined as the distance, or *difference in pitch*, between two given tones.*

54. An Interval may be formed by two notes, either sounded together, or in succession.—

Fig. 20. 

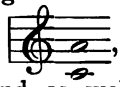
(*a.*) is called an Harmonic Interval.

(*b.*) is called a Melodic Interval.

General Names of Intervals.

55. An Interval is named according to the number of degrees of the scale included in its extent.

Thus, the Interval from C to D ** is called a 2nd, because two Degrees of the scale are concerned in its production. Similarly, from C to E is a 3rd, from C to F a 4th, from E to B a 5th, etc.

56. To determine the name of an interval, count the degrees, including those upon which the notes of the interval stand (i. e., including extremes). For example, in determining the name of  , count the degrees upon which C and A stand, as well as those lying between, giving the total of six ; therefore, the interval in question must be a 6th. N. B. Unless otherwise indicated, intervals are usually counted from the lower note upward.

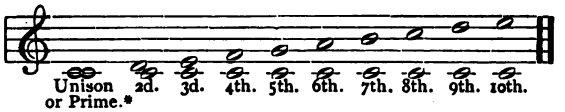
Advanced Course.

* The word Interval may also mean the relationship of two notes in respect to pitch; or the *effect* produced by the two notes sounding together or in succession.

** The *lower* note of an interval or chord is always mentioned first.

Table of Intervals.

Fig. 21.



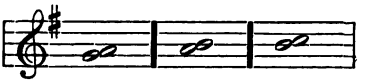
Keyboard and Written Exercises.**

57. (*a.*) Form tables similar to the above, starting from the notes D, F, E, G, B, and A (all in the key of C).

(*b.*) Form similar tables in the keys of G, F, D, B♭, etc.

(*c.*) Write all the Seconds in the key of G; e. g.,

Fig. 22.



etc.

(*d.*) Write all the Thirds in the key of F.

(*e.*) Write all the Fourths, Fifths, Sixths, Sevenths and Octaves in the key of E; in the key of B♭; A; D♭; F♯.

(*f.*) Repeat all of the above at the keyboard.

Specific Names of Intervals.

58. Intervals are of various kinds, the names of which fairly express their meaning, as follows: —

Major: } *** The *normal or standard of measurement.* The difference between the two
Perfect: }

will be explained in § § 60, 73 and 76.

---

* When two voices sound the same note, there is no difference in pitch, and therefore no interval between them. Consequently, the Unison cannot strictly be called an interval.

** Pupils are liable to make mistakes when counting an interval upon the keyboard; but when written, by counting the lines or spaces upon which the notes stand and all the intervening lines and spaces, mistakes become impossible. Or better still, count the number of *letters* involved, including extremes.

*** For the present the pupil need only know that Unisons, Fourths, Fifths and Octaves may be Perfect, but not Major. (Some theorists call the Perfect intervals *Perfect Major*, to distinguish them from those which are simply Major.)

Minor: meaning "less" by a semitone than Major.

Diminished: meaning still less, or less by a semitone than Minor or Perfect.

Augmented: meaning increased, or greater by a semitone than Major or Perfect.

The difference between the various kinds of intervals is illustrated by the following, from Eugene Thayer: —'Let us take a pair of hand-bellows, and allowing them to take their natural position, find them to be nearly wide open — the handles well apart. Let this position represent the Major interval. If the upper handle be pressed down a little, the distance between the two handles (or the interval) is lessened: — this corresponds to the Minor interval. If we now raise the lower handle, pressing them still nearer together, the distance (interval) is again decreased, representing a Diminished interval. Again, letting the handles spring back to their original (normal) position, representing the Major interval, if we raise the upper handle, or depress the lower one, we increase the distance between them, thus representing an Augmented interval.'

The Standard of Measurement.

59. Consider the scale of C upon the keyboard. **From C to any other degree of the scale of C, or from C to any white key upon the Piano, is a Major or Perfect, i. e., a Normal, interval.**

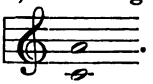
(For example, see Fig. 21. All the intervals there given are Major or Perfect.) This gives us a practical *standard of measurement by which we can measure any interval;* for, as we have seen in the above definitions, a Minor interval is a semitone smaller than a Major, an Augmented a semitone larger than a Major, etc.

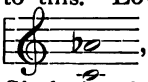
60. Of the Normal Intervals (as shown in Fig. 21) the Unison, Fourth, Fifth, and Octave are called Perfect; while the others, namely, the Second, Third, Sixth and Seventh, are called Major. The same statement in more general terms would be, "Normal Unisons, Fourths, Fifths and Octaves are called Perfect; while Normal Seconds, Thirds, Sixths and Sevenths are called Major." Still another form of the statement is, "The Normal intervals are divided

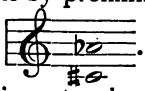
into two classes, half of them being called Perfect and half Major." Memorize the first statement above, and do not seek to understand the reason for the above divisions until you study the Inversions. The reasons will become more apparent as you go into the subject.

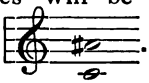
61. It is not the mere elevation or depression of the notes that changes an interval, but the fact that the tones are either separated further from each other, or are brought nearer together; i. e., the *distance* is changed.

62. Let us make a practical application of the above.

We found in § 56, that from C to A (counting upward) is a Sixth; and, according to § 59 and foot-note, it is a Major Sixth:  .

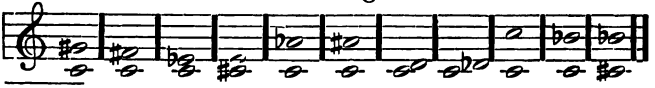
Let us apply some of the changes mentioned in § 58 to this. Lowering the upper note a semitone, we have  , which, being a semitone less than the Major Sixth, is called a Minor Sixth.

Again, taking this Minor Sixth, by again decreasing the distance between the notes, this time raising the lower note by prefixing a sharp, we obtain a Diminished Sixth: *  .

Again, returning to the Major Sixth as a starting-place, if the upper note be raised a half-step, the distance between the two notes will be increased, forming an Augmented Sixth:  .

Exercises.

Name each of the following intervals.



*The interval of the Diminished 6th is not commonly used (see Table, § 64), but it is useful here for illustration.

Exact Measurement of Intervals.

63. An interval can be exactly measured, and its Specific name placed beyond doubt, by counting the number of *Half-Steps* contained in it (just as we counted the number of *degrees* to obtain the General name). For example, from C to A is a 6th. Counting the number of half-steps, we find it has nine. Therefore, as our Standard Sixth contains nine half-steps, *any other Major sixth*, without regard to its position, *must have the same number of half-steps.* According to § 58, an Augmented Sixth must have one half-step more, or ten half-steps: and a Minor Sixth one half-step less, or eight half-steps. In this way we may compare any interval with the Standard of Measurement, and learn whether it is Major, Minor, Diminished, or Augmented.

64. As no interval is commonly used in more than three of these forms, a table is subjoined, showing them in order as generally used.

Table of Intervals.

Showing the number of *half*-steps in any interval.

[For reference; — not to be memorized.*]

	Diminished.	Minor.	Perfect.	Major.	Augmented.
Primes:	—	—	0	—	1
Seconds:	—	1	—	2	3
Thirds:	2	3	—	4	—
Fourths:	4	—	5	—	6
Fifths:	6	—	7	—	8
Sixths:	—	8	—	9	10
Sevenths:	9	10	—	11	—
Octaves:	11	—	12	—	—
Ninths:	—	13	—	14	15

*It is unnecessary to memorize this table, as the pupil can easily find the number of half-steps in a given interval by the use of the principles shown in § 63.

65. In working out the following exercises, the pupil should first find the note for the General name of the interval as shown in § 56, afterward adding any sharps or flats necessary to bring it into correspondence with the requirements of the Specific name. For example, "What is the Major Sixth from E?" Process:—Beginning to count with the note E, the sixth count will bring us to C; therefore, a Sixth from E must be C; C is thus the *General* name for the desired interval. Next, a Major Sixth must have (refer to the standard of measurement) nine half-steps: as there are but eight half-steps from E to C, it is evident that the latter must be raised by a sharp, giving, for the Major Sixth, C♯.

Advanced Course.

66. The standard of measurement, § 59, showed the intervals from the note C to every other note in the scale of C to be "Normal" intervals. In a similar way, from the *Keynote* of any other key *to any note of that scale* would be also a "Normal" interval, e. g., from A♭ to any note in the scale of A♭ would be just as "normal" as from C to any note in the scale of C. Therefore, instead of counting the half-steps in naming or forming a specific interval, the practised musician would think, "What is the 'Normal' interval?" counting from any given note (by transferring his thought for the instant to the key of that given note), and would raise or lower that normal note to obtain the required interval. For example: What is the Augmented Sixth from F♯? Process:—If we were in the key of F♯, the Normal Sixth would be found by counting up to the 6th degree of the scale, giving the note D♯. (Having found the desired interval, do not think further in the key of F♯.) As the required Augmented Sixth is a half-step greater than the Normal, the D♯ must be raised another half-step, giving the note D× (double sharp).

Regular Course.

67. Remember that the *General* name is obtained by counting the *degrees* of the scale, while the *Specific* name is found by counting the *half-steps*. Therefore,

the use of *sharps* or *flats can never change the General name* of an interval; — a Sixth remains a Sixth even if there are several sharps or flats prefixed. The *kind of* Sixth it would be is quite a different question, coming under the head of *Specific* name.

Exercises.

68. (*a.*) Form a Major Sixth from each of the following notes, counting upward: —D, E, F♯, B, A, B♭, A♭, D♭, A♯, G, E♭, G♭, C♭, G♯, C♯, F♭, B♯, etc.

(*b.*) From the same notes, form Major Thirds, Minor Thirds, and Minor Sevenths.

(*c.*) Form Diminished 7ths from D, E, F♯, B, A, B♭, A♭, A♯, C, E♭, C♭, G♯, C♯, F♭, B♯, etc.

(*d.*) Form Augmented 4ths from D, E, F♯, B, A, B♭, A♭, D♭, A♯, G♯, E♭, G♭, C♭, G♯, C♯, F♭, etc.

NOTE. In accidentally raising or lowering a note, it is not customary to raise or lower it *beyond* the pitch of the natural next above or below; e. g., B would not be double-sharped, since that would bring it *beyond* C, the next natural; nor would F have a double flat, since that would take it beyond the next natural.

(*e.*) Repeat all of the above at the keyboard.

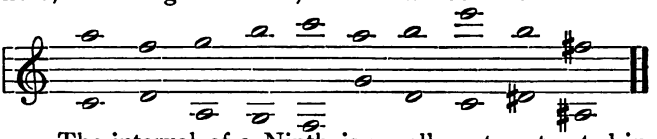
Extended Intervals.

69. As an octave above any note is considered a repetition of that note and bears the same name, so intervals (with the exception of the Ninth), if they extend over more than an octave, are considered as repetitions of the smaller intervals formed by the same notes an octave nearer together. Thus: which is an interval of an Eleventh, is considered as an extension of ,

which is a Fourth. Therefore, in finding intervals, the notes should be brought within the compass of an octave.

Exercises.

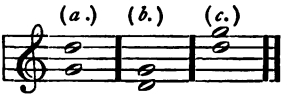
Name the following intervals, lowering the upper note, or raising the lower, one or two octaves:



The interval of a Ninth is usually not contracted in this way, as the chord of the Ninth requires that interval to be nine degrees from the root. See Chapter VIII.

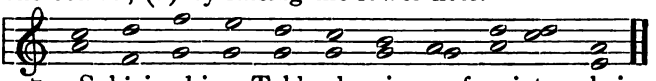
Inversion of Intervals.

70. By Inversion of Intervals is meant that the notes change their relative positions;—the upper one, by being lowered an octave (retaining its original name), becoming lower than the other; or, the lower one, by being raised an octave, becoming higher than its fellow. Thus, the interval at (*a*) in the accompanying figure becomes like (*b*) by lowering the upper note, and like (*c*) by raising the lower one, which is the same thing as (*b*), but an octave higher.



Keyboard and Written Exercises.

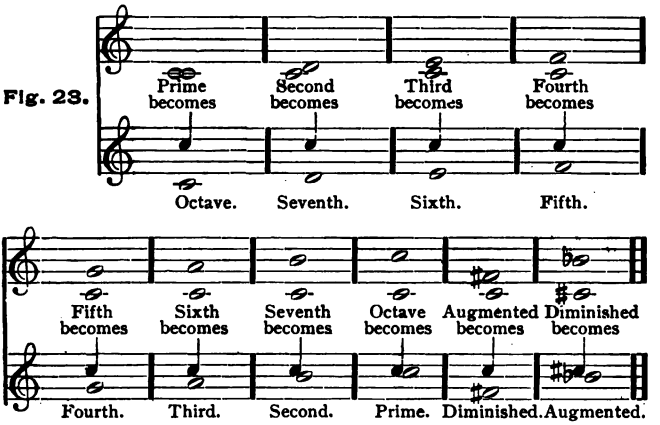
Invert the following (*a*) by lowering the upper note one octave; (*b*) by raising the lower note.



71. Subjoined is a Table showing a few intervals inverted. The lower staff shows the result of inverting the intervals contained in the upper staff. Notice that in the

tables the inversions are produced by raising the lower note one octave. It would have been quite as easy to lower the upper notes one octave, writing the inversions in the Bass clef. The quarter-notes in the lower staff show the notes which have been raised an octave.

Fig. 23.



72. From the above let us notice the following: — (*a.*) To learn what will be the inversion of an interval (that is, the interval which will result by inverting), subtract the number of the interval from 9, and the result will be the interval produced by the inversion. For example, what would the interval of a Sixth become by inversion? Process: $9 - 6 = 3$; therefore, a Sixth, when inverted, becomes a Third. (See p. 42, Addendum.)

The following table shows the fact still more clearly: —

From	9	9	9	9	9	9	9	9
Substract	1	2	3	4	5	6	7	8
Result	8	7	6	5	4	3	2	1

From the first table (Fig. 23) we notice also :—

73. (*b.*) By inversion { Major intervals become Minor.
By inversion { Minor intervals become Major.

By inversion { Augmented intervals become Diminished.
By inversion { Diminished intervals become Augmented.

By inversion { Perfect intervals remain Perfect (and therefore Normal).

This peculiarity of the Perfect intervals renders it necessary to class them differently from the Major, though in practical Harmony this distinction does not affect their use. A further difference between Major and Perfect intervals appears in § 76.

Keyboard and Written Exercises.

74. (*a.*) Find the Perfect intervals in Fig. 21. (There are four.)

(*b.*) From the note D form a series similar to Fig. 21, and invert each interval as shown in Fig. 23.

(*c.*) Write examples of Diminished and Augmented intervals, and invert them. To learn what Diminished and Augmented intervals are in use, the pupil may refer to the Table in § 64.

Consonant and Dissonant Intervals.

75. In the preceding paragraphs, intervals were classed according to the number of half-steps contained. They are also classed, according to their musical effect, as :—

(*a.*) *Consonant*, meaning those intervals upon which it is agreeable to pause, and which do not need to be followed by another interval to produce a pleasant effect ; and

(*b.*) *Dissonant*, or those which are not satisfactory to dwell upon, or to use in the final chord of any composition.

Consonances are further divided into *Perfect* and *Imperfect Consonances*, with reference to the *degree* of concord, as follows :—

Consonances.	Perfect: *	All Perfect intervals, viz., Perfect Prime (or Unison), Perfect Octave, Perfect Fourth, Perfect Fifth.
	Imperfect:	Major Thirds and Sixths. Minor Thirds and Sixths.
Dissonances.		Seconds and Sevenths, together with all augmented and diminished intervals; i. e., all intervals other than the Perfect intervals and Major and Minor Thirds and Sixths.

Exercises.

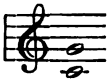
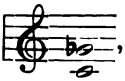
(*a.*) The pupil will refer to all the previous exercises and illustrations in this chapter, particularly to the Table in § 64, and mark each interval as Perfect or Imperfect Consonance or Dissonance.

(*b.*) Both at the keyboard and in writing, form first all the consonant intervals and then the Dissonant intervals from the note D.

(*c.*) Proceed similarly from the other notes.

76. A furthur difference between Major and Perfect intervals appears at this place. When a Major interval

* The distinction between perfect and imperfect consonances is of no importance to the general student, who will recognize an interval or chord either as a consonance or a dissonance. There need be no further distinction at present.

is decreased by a semitone (see § 62), it becomes a Minor Interval, but its classification as Consonant or Dissonant is *never changed by this reduction.* For example, a *major* 6th being consonant, the *minor* 6th will be consonant; or, the *major* 2nd being dissonant, the *minor* 2nd will also be dissonant, as shown in the above table; whereas, if a Perfect interval be decreased by a semitone, it at once loses its characteristic of being "Consonant" and becomes a "Dissonant" interval. For example,  is a Perfect Fifth. If we lower the upper note a semitone, the result is  , which is a Diminished Fifth and a Dissonance. Thus we see that a Major interval can be made less (Minor) *without changing its classification* of "Consonant"; while a Perfect interval *cannot* preserve its original classification when thus altered.*

Confusion of Terms.

77. There is much confusion in the terms used in connection with the Theory of Music. Carefully notice to what each term refers. A few examples are given below of the various meanings of certain words: —

Degree may refer to the various steps of the Scale.

Degree may also refer to the lines and spaces of the staff.

Steps may refer to the various degrees of the Scale.

---

* The word "Perfect" conveys but little meaning, as these intervals are perfect only in respect to their quality of remaining "Normal" when inverted, while Major intervals do not. A more descriptive name might be "*Sensitive*" interval, as such an interval cannot be changed in any manner without producing a dissonance.

Steps and *Half-Steps* also to the distance between tones.

Tones and *Semitones* may refer to the distance between tones.

Tones may also refer to sounds, regardless of distance from other sounds.*

Interval refers to distance between tones.

Interval sometimes refers to the steps of the scale.

The names of the *Degrees of the Scale* (as Fifth degree, Third degree, etc.), are liable to be confused with the *Intervals of the same name:* therefore be careful to say whether you mean Degree or Interval.

Definitions.

78. *Diatonic Intervals.* The word Diatonic refers to the scale; a Diatonic interval would be, therefore, an interval formed by two notes of the scale without sharps or flats other than those indicated by the signature.

Chromatic Intervals. The word Chromatic in Music refers to the half-steps lying between the notes of the scale, and which are produced by the use of accidental sharps, flats, or naturals, to change the diatonic tones. A Chromatic interval, then, would mean one where at least one of the notes has an accidental sharp, flat, or natural before it.

N. B. A Half-step can be either Chromatic or Diatonic; e. g., from C to C♯ is a Chromatic half-step, because only one note (C) is concerned in the interval. (See § 44.) But if C♯ is called D♭, the half-step becomes Diatonic, because two notes (or two degrees on the staff) are concerned.

* The words *Note* and *Tone* are often used interchangeably, though a tone is properly a sound, and a note is a character to represent a sound to the eye.

Enharmonic. This word refers to the notation only;* when the same tone is expressed in two different ways, there is said to be an Enharmonic Change; e. g., A♭ when changed to G♯ is said to be enharmonically written, because the name has been changed while the tone remains the same. (See foot-note, and § 24.)

This chapter should *always* be studied twice (repeated very carefully) before proceeding, as it is impossible to understand the *full meaning* of the first part before the last part has been studied.

Synopsis.

79. Before proceeding, the pupil *should not fail to write a synopsis* of the chapter as suggested at the close of Chapter I, and endeavor to gain an orderly view of the subject. Failure to do this is often the cause of very confused ideas in regard to Harmony.

Historical.

80. The beginning of Music was Melody, everything being in unison and without accompaniment. In some MSS. of the 10th century, examples of church-music are found, progressing at the regular interval of a Fourth. The meaning of this has been disputed, some claiming that it was intended to be sung in unison and then repeated a Fourth higher, while others think the two parts were to be sung together, the effect of which would be disagreeable to modern ears.

At about this time a "Drone Bass" was sometimes used—i. e., a Bass continuing upon one note regardless of the melody. In this way various intervals, such as Fourths, Fifths, and Sixths, were necessarily, though quite accidentally, formed. Soon afterward (11th century) it was

* Advanced students of theory may know that Enharmonic intervals have a *very slight* difference in pitch; e. g., G♯ has a few vibrations more per second than A♭, though the Piano does not show it.

discovered that two complete and independent melodies might be sung together and produce a pleasant effect. From this discovery came Counterpoint, and before the close of the 14th century music was written in four parts, though little was known of the effects of harmony. At this period the controlling principle was to invent several melodies which would not conflict when sung together, rather than to study the effect of the combination of three or four tones forming a chord. Consequently, at this time, till the close of the 14th century, the *harmonic* effects were *accidental* rather than studied.

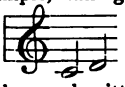
The Perceptive Faculties.

(Continued from page 24.)

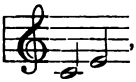
Intervals.

81. The perception of intervals, though more difficult than of single tones, need not cause any especial trouble if properly presented, and if the first steps have been thorough. It is probable that the student will advance more rapidly in Theory than in the development of the perceptions. Do not try to make the two keep exact pace, though in explaining each chapter, the ear as well as the eye and the understanding should be actively interested.

Process.

82. *1st Step.* This chapter should be taught as a direct continuation of the lessons on the degrees of the scale, not as a new subject. For example, taking up the subject at (*c*), § 49, after singing or playing  and the succession has been named Doh, Ray, by the class and written in notes, call attention to the fact that the progression has been explained in Chapter II as an interval of a Second. (This forms a Melodic interval; see § 54.) In a similar way, the teacher may proceed up the scale, the next time taking the notes D and E, the third time E and F, etc., being careful that the pupils do not lose sight of the syllabic names. As often as they forget or miss them, return to *Doh*, and let them sing (or recognize) up to the desired notes.

N. B. Being a dissonance, the two notes of the interval of the Second should not be sung together, unless once or twice merely to show their dissonant character.

83. *2nd Step.* Sing or play the notes  , requiring the syllabic names as before, and allow them to be written. Explain that this progression forms a Third, and proceed up the scale, taking the notes D and F, E and G, as shown above, requiring first the syllabic names, after which they should be written.

Next, returning to C and E, allow part of the class to sing the lower note, calling it *Doh*, while the remainder sing E, calling it *Me*. This illustrates the *Harmonic* interval, as singing in succession represented the Melodic.

Continue up the scale as before, but now allowing both notes to be sung together and properly written to express the *harmonic* interval.

84. *3rd Step.* Treat Fourths, Fifths, Sixths, Sevenths, and Octaves (not exceeding the limit of the voices) in a similar manner, first Melodically, and then Harmonically.

Carefully call attention to the *musical effect* of the different intervals as well as to the various distances apart.

85. *4th Step.* Sing or play successions of two single notes, requiring first the syllabic names and then the interval.

86. *5th Step.* Play various intervals (harmonic), first striking the notes in succession ("spreading") if necessary, requiring both the syllabic names and name of the interval. · *Let everything be written* as soon as the pupil recognizes it, to gain the habit of expressing his impressions. (Begin this step [§ 86] with Octaves and Fifths.)

87. *6th Step.* Striking a Major Third, change it to Minor by lowering the upper note, calling attention to the different musical effect and the means of producing it; explaining at the same time that some of the Thirds in the scale are Minor without any change, for example, from Ray to Fah, Me to Soh, etc.

88. *7th step.* Display Major and Minor Sixths in a similar manner. Introduce Diminished and Augmented intervals very cautiously, on account of their difficulty.

89. *In general.* Arrange the exercises carefully in point of progressive difficulty. Do not let the pupil get confused in regard to the syllabic names. He must have a firm hold of the Tonality. Be patient.

The pupil may now take two-part songs (or the soprano and alto of hymns and choruses), and try to think how they would sound, afterward comparing with the effect when played or sung.

Exercises in Rhythm should be continued.

(Addendum to § 72.)

Complementary Intervals.

Any two intervals which, when added together, form an octave, are called *Complementary* intervals, since each completes, or complements the other in the formation of the octave. This is simply another statement of Inversion, for any interval and its inversion form Complementary intervals. *Illustration*:— A Sixth and a Third are Complementary, or the Sixth is said to be Complementary to the Third, and *vice versa*. Similarly, Fourths and Fifths, or Seconds and Sevenths, are Complementary.

PART II.

CHAPTER III.

TRIADS.

The Foundation of the Harmonic System.

NOTE. § 90 is not to be studied. It is designed more especially for the teacher and for those inquiring minds who would know something of the scientific basis of chord-formation, and observe the wonderful symmetry and simplicity of Nature's laws.

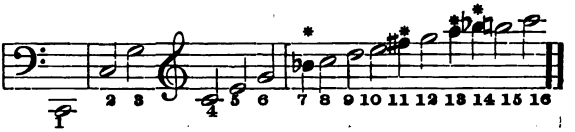
Advanced Course.

Harmonics.

90. Science has demonstrated that a musical tone is not one simple sound, but is made up of the combined sounds of many different tones, softly sounding with the principal or Primary tone. It has also been proved that these secondary tones bear a certain relation to the principal or Primary tone, and though they sound but faintly (being inaudible to untrained ears), can be distinctly recognized by those who are trained in this direction. These secondary or accompanying tones are called *Overtones* or *Harmonics.*

When a long string, tightly drawn, is put into vibration, it vibrates in its full length alone only an instant; after a short time it vibrates also in sections (without interfering with the full-length vibrations) producing higher tones simultaneously with the principal or fundamental tone. For illustration, if a string producing the tone is put into vibration, this tone will be very distinct, but the presence of the following tones, sounding very faintly, can be proved.

Fig. 24.



Primary tone.

* These harmonics are not exactly true to pitch.

This series is called the Harmonic Chord, or Nature's Chord Those who are already familiar with chords will observe, that the first six notes sounded together are simply an ordinary chord. If the next note, B♭, is added, a Chord of the 7th is formed. If to the last chord the ninth note of the series is added (the eighth note, C, is merely a duplicate of the lower octaves), a chord of the Ninth is formed. In these three chords, or rather in this one Harmonic Chord, is the *basis of the Harmonic system*, from which the various chord-formations can be logically developed. The above is designed to show four points, viz:—

(*a.*) That a musical tone is made up of many tones sounding together as above stated.*

(*b.*) That a chord, as commonly understood, is an imitation, at the hands of Man, of the great chord of Nature, or at least it has been made to correspond very closely with it.

NOTE. Young students are liable to be troubled by the fact that some of the remoter harmonics are strongly dissonant with the fundamental tone and triad. But this need not disturb them, as the harmonics are more indistinct as they are more remote from the Fundamental tone, and the finest ear cannot detect more than six or seven. Therefore, the upper ones are too weak to have much effect upon a tone, though Science conclusively proves their presence.

(*c.*) That chords are produced by a process of *adding to*, or *building upon, a note called the Fundamental*, or *Root*. The Chord of the 7th was produced by *adding one note to the chord already formed;* and the Chord of the 9th, by *adding still one more.*

(*d.*) Conversely, that the chord built upon a Root is considered as *derived from that Root.*

Regular Course.

Triads.

91. When any note is taken, together with the intervals of a Third and a Fifth above it, a Triad is formed. A Triad, then, is a chord of three notes: a Fundamental

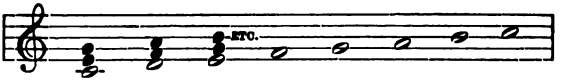
* There is a strong analogy between a single tone and a ray of light. When thrown through a prism, light is seen to be a compound of various colors, the prism serving to separate the ray into its constituent parts. Similarly, a tone can be shown by the laws of sympathetic vibration to consist of the Primary tone and Overtones, as shown in § 90.

or Root, together with its Third and Fifth, counting upward; e. g., .

As shown above, the whole Harmonic System may be said to rest upon this simple Triad. A distinguished musician has declared, "There is but one chord in the world, the Common Triad. All others are merely additions to this."

Exercises.

(*a.*) Write the scale of C, and upon each note, used as a Fundamental, construct a triad, without considering whether the intervals are Major or Minor (see Fig. 25).

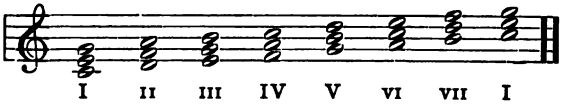
Fig. 25. 

(*b.*) Write similarly the scale of G, F, D, B, etc., not regarding sharps or flats except to place them in the signature, and construct a triad upon each note, as above.

(*c.*) Repeat the above exercises at the keyboard, and, in addition, take each of the remaining major keys.

Marking the Triads.

92. In § 2 it was shown how each degree of the scale is numbered from the lowest to the highest. The Triads are described in a similar manner, by indicating upon which degree of the scale they are founded; for example, "Triad on the 3d degree," "Triad on the 6th degree," etc. For this purpose Roman Numerals are employed, being written under the staff as shown in Fig. 26.

Fig. 26. 

Exercises.

Mark the Triads formed in the exercises in § 91.

Specific Names of Triads.

93. Triads are divided into four kinds, Major, Minor, Diminished, and Augmented. These varieties correspond closely with the intervals of the same names, for they are named, *according to the intervals of which they are composed*, as follows: —

A Major triad has a Major 3rd and Perfect 5th.

A Minor triad has a Minor 3rd and Perfect 5th.

A Diminished triad has a Minor 3rd and Dimin. 5th.

An Augmented triad has a Major 3rd and Augmented 5th.

These four kinds of triads are indicated, in marking the triads, as follows:—

Major, by a large Roman numeral, for example: I.

Minor, by a small Roman numeral, for example: ii.

Diminished, by a small Roman numeral with the sign ° affixed: vii°.

Augmented, by a large Roman numeral with the sign′ affixed: III′.

Exercises.

(*a.*) Write the Harmonic Minor scale of A, and form triads upon the various steps, as in § 91. Next, describe each triad (Major, Minor, Diminished, or Augmented), and mark as above indicated.

(*b.*) Repeat the process in E, D and B minor.

(*c.*) Repeat the above at the keyboard, adding other Minor keys.

Principal and Secondary Triads.

94. The triads upon the Tonic, Dominant and Subdominant (see § 34) are called the Principal or Primary Triads, for the following reasons:—

(*a.*) They are most frequently used.

(*b.*) They embrace every note of the scale.

(*c.*) They are sufficient to determine, beyond doubt, the key.

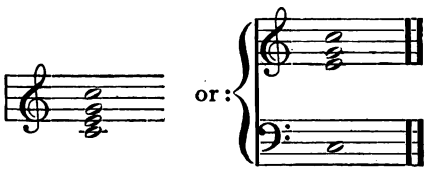
The Triads upon the remaining degrees are called Secondary Triads.

Exercises.

Returning to the exercises in §§ 91, 92, 93, the pupil will describe each Triad, indicating the Secondary Triads by the proper Roman numeral, and the others by the first letter of their names; thus, T, (Tonic); D, (Dominant); and S. D, (Subdominant).

Doubling.

95. In a Triad there are but three different notes. Therefore, if we write music in four parts, one of the three notes must be doubled, i. e., must appear in two parts. *The Fundamental is the best note for doubling, and the Third the poorest.* (See § 162.) The four-part chord resulting from the doubling of one note of the triad is called a Common Chord; e. g.,



Position.

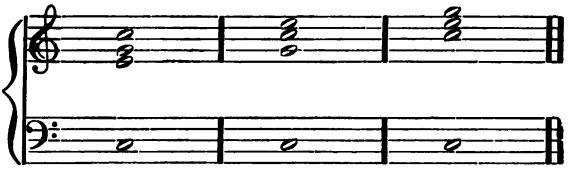
96. The three notes composing the Triad do not need to be always in the same order, with the Fundamental lowest and the Fifth at the top. The Fundamental or the Third may also occupy the highest place, and the term Position is used to denote which note is highest, as follows:—

(*a.*) When the Fundamental or its octave is highest (in the Soprano) the chord is said to be in the *Position of the Octave.*

(*b.*) When the Third is highest, the Chord is in the *Position of the Third.*

(*c.*) When the Fifth is highest, the chord is in the *Position of the Fifth.*

Fig. 27.



Position of the Octave. Position of the 3d. Position of the 5th.

Keyboard and Written Exercises.

(*a.*) Form the triad upon each of the remaining degrees of the key of C, showing each triad in its three positions, as illustrated in Fig. 27, which gives the triad upon the first degree. Use two staves in writing.

(*b.*) Form Major triads of A, E, F, A♭ and B♭ in the three positions, using the proper (key-) signatures in each case.

Four-part writing; Connection of Triads.

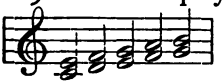
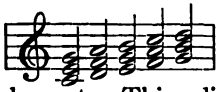
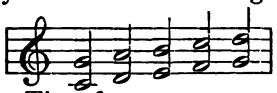
97. Each chord of four notes is considered as written for a quartet of voices, Bass, Tenor, Alto and Soprano. The Soprano and Bass are called the *Outer* or *Extreme* parts: the Alto and Tenor are called the *Inner* parts. In four-part writing the effect should be considered from two points of view:—

(*a.*) The Melodic effect of each part (as it would sound if sung alone).

(*b.*) The Harmonic effect of the four parts sounding together, and the connection between the successive chords.

Before proceeding to practical exercises in connecting chords and leading the parts, the pupil should learn something of the difficulties in the way of making a good effect, as follows:—

Consecutive Fifths.

98. If we play a series of Thirds, for example,  etc., the effect is not unpleasant. If we add a Fifth, changing each Third to a triad, thus:  etc., we find the effect harsh and unpleasant. This disagreeable effect was evidently not produced by the Thirds sounding in succession, for the following:  etc., is, if possible, still worse. Therefore, we may conclude that the bad effect is produced by the succession of Fifths.*

Consequently, *Consecutive Fifths are not allowed.*

Consecutive Octaves.

99. Again, if in a four-part chorus two voices sing the same notes, either in unison or an octave apart, there would be in reality but three different parts, which would weaken the harmony. Therefore, *Consecutive Octaves (and Unisons) are not allowed.*

100. In order to learn how to avoid Consecutive Fifths and Octaves, the pupil should realize that in the progression of the parts, three different movements are possible:—

(*a.*) **Parallel Motion,** in which two parts move in the same direction; see (*a*), Fig. 28.

(*b.*) **Oblique Motion,** in which one part remains stationary, while the other moves; see (*b*), Fig. 28.

(*c.*) **Contrary Motion,** in which the parts move in opposite directions: see (*c*), Fig. 28.

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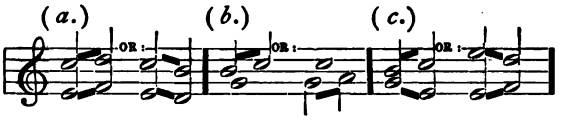
* The harshness of consecutive 5ths is caused by the suggestion of two different keys in succession without proper (modulatory) connection.

Fig. 28.



In four-part writing, two or even three different kinds of motion can occur simultaneously between the different parts. Parallel motion between three parts is permitted, if no Consecutive Fifths or Octaves result from it. Parallel motion between all four parts is not good, and it is difficult to avoid the forbidden consecutives if the parts all move in the same direction.

To Avoid Consecutive Fifths and Octaves.

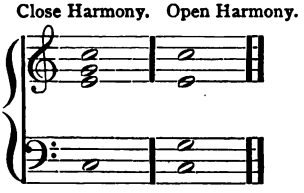
Let one or two parts progress in contrary motion to the others.

This rule will cover all cases.

Open and Close Harmony.

101. When the Soprano, Alto and Tenor all lie within the compass of an octave, the parts are said to be written in *Close* Harmony. If they exceed the compass of an octave, they are in *Open* Harmonv

Fig. 29.



Close Harmony should be used in the following chapters unless otherwise indicated.

To Connect Two Triads.

NOTE. The following is of especial importance, and should be thoroughly mastered before proceeding.

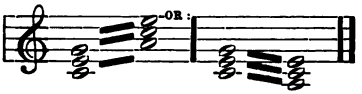
102. Under this head two cases are to be considered:—

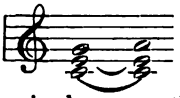
(*a.*) *When the two given chords have one or more notes in common.*

(*b.*) *Where there is no common tone* to serve as a connecting-link.

When the Chords have a Note in Common.

Let us take C – E – G and A – C – E, for example, to connect. Having two notes in common, it is evident that there is a close connection between them, and it is only necessary to make this connection apparent to the ear. If we play the two chords thus:



there is to the ear no connection whatever. But when played thus:  the connection is very apparent. This is because the *notes common to both chords are retained in the same parts.* That is, the Tenor and Alto, which have the notes C and E in the first chord, retain them in the second. Therefore, *notes common to both chords are to be retained in the same parts.*

It will be seen, that to follow this all-important principle, the "position" of the chords must be adapted to the necessities of the situation, sometimes one note being highest and sometimes another.

The Process.

103. The following is given to illustrate the mental process by which the beginner should solve every problem. Having written the first chord in notes:—

1st step. What are the notes of the second chord?*

* This question, though unnecessary here, is of importance when the pupil begins to work exercises from a given Bass, as in § 111.

(N. B. If the pupil has trouble in keeping the notes of the second chord in mind during the following steps, he may write them on a separate slip of paper.)

2nd step. Is any note common to both chords? What note is it?

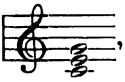
3rd step. In which part (Soprano, Alto, etc.) of the first chord is this "common" note found? *Ans.* In the— (Here mention whether it is Soprano, Alto, Tenor, or Bass), therefore it must appear in the same part in the second chord.

4th step. Write it, and connect with the same note in the first chord by a tie. (Do not write any other notes yet.)

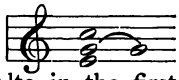
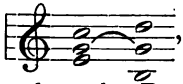
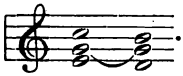
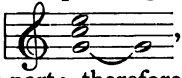
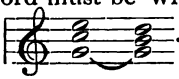
5th step. Name the remaining notes of the second chord.

6th step. Which "position" of the second chord will enable the remaining notes of the first chord to progress in the smoothest manner to the remaining notes of the second chord?

Illustration.

104. To connect the triads C–E–G, written thus:  , and G–B–D.— It is apparent that G is the "common" note or connecting-link. Therefore, as G is in the Soprano in the first chord, it must be in the Soprano in the second; according to § 103, 4th step, we have: . It is now apparent that the remaining notes of the second chord, B and D, must lie *below* G (as the Soprano is always the highest part), thus: . As this makes a smooth leading

of the Alto and Tenor (no wide skips*) the effect is good.

If the first chord is in this position: 
the connecting note, being G, is in the Alto in the first chord, and must appear in that part in the second chord. Now it is plain that we must *so arrange the remaining notes of the second chord*, B and D, that the Soprano and Tenor of the first chord *will each have a note to which it may progress*; therefore, we cannot place *both* B and D below G, as was the case before, but one should be *above* and one *below*, and the choice of position must depend upon the possibility of making a smooth progression. Let us try with D above and B below, giving:  , and compare it with the effect when we place the B above and D below, thus:  . It will be seen that although the former will answer, the latter gives the better effect, because there are no skips. Again, taking the first chord in this position:  , we find the connecting note in the lowest part; therefore, both the remaining notes of the second chord must be written above the connecting note, giving:  .

Keyboard and Written Exercises.

105. (*a.*) Connect the triad of C with that of F Major,

* In the early exercises the parts should not make very wide skips from note to note, but should progress by the smaller intervals (2nds and 3rds) wherever possible. In composition, where the parts progress by the smaller intervals, the effect is restful and tranquil. Where they progress by the larger intervals, such as 4ths, 5th, 6ths, and 8ves, the effect is bolder and more aggressive.

taking successively the various positions of the first chord, as illustrated above. Use one staff in writing.

(*b.*) Connect (in three positions) the triad of C maj. with that of E min.; with A min.

Connect (in three positions) the triad of D min. with that of F maj.; with A min.; and with G maj.

Connect (in three positions) the triad of E min. with that of C maj.; with G maj.

Connect (in three positions) the triad of E min. with that of A min.

Connect (in three positions) the triad of F with triads upon C, A, and D (all in the key of C).

Connect (in three positions) the triad of G with triads upon C, E, and D

Connect (in three positions) the triad of A with triads upon C, D, F, and E.

Connect (in three positions) the triad of B with triads upon E, D, and F.

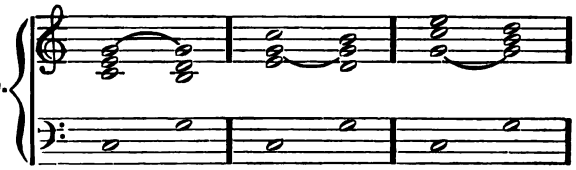
Note that all the above are in the key of C Major.

(*c*) Transpose (*b*) into other keys, and repeat. (This transposition will not be difficult, if we remember that to transpose a note or a chord it is given the same relative place in the new key that it occupied before being transposed. E. g., if a triad is on the second degree in the key of C, when transposed it must be placed upon the same degree of the new key: if on the fifth degree in the original key, it must be placed upon the same degree in the new key. Likewise the "position" and inversion of a chord must correspond when transposed. If we substitute the Roman Numerals (as shown in § 92) for the letters C, D, E, etc., in exercise (*b*), it will be easy to find the notes corresponding to these numerals in any desired key.

(*d.*) Write (*b*) in four parts, as illustrated in Fig.

30; the root of each chord being written in the Bass, which will remain the same for all positions.

Fig. 30.



To connect two Triads when there is no Common Note.

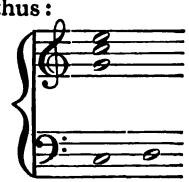
106. Although two given chords belonging to the same key may not have a visible connection by means of a common note, there is a certain relationship through their being members of the same key, (see the Author's "How to Modulate," § 3,) and with a careful leading of the parts they may be used in succession.

Especial attention must be given to avoid consecutive Fifths and Octaves, remembering that Contrary Motion is the means of so doing. It should be noticed that some Positions are much better than others for a given connection, and that some Positions cannot be used at all. The smoothest connection is usually where the three upper parts move in a direction contrary to the Bass.

The Process.

107. The mental process of finding the correct leading of the parts is somewhat as follows:

Example for illustration. Connect the triad of C, in the position of the 3rd, with the triad of D. Expressed in notes, thus:

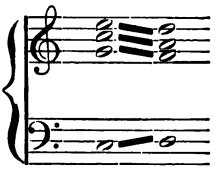


(*1st step.*) What are the notes of the Second chord? Ans., D F A.

(*2nd step.*) In which direction does the Bass move in the example? Ans., Upward; therefore it would be well to have the three upper parts (or as many of them as possible) move downward (to move contrary to the Bass).

(*3rd step.*) Which position of the second chord allows the proper progression of the parts, without Consecutive Fifths and Octaves?

(*Or, 3rd step.*) Write the notes of the second chord, so that each part shall progress in the desired direction, avoiding Consecutive Fifths and Octaves.

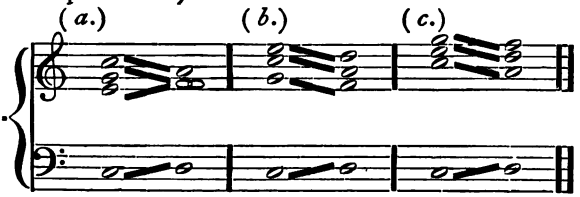


(*4th step.*) Would any other position give a better leading of the parts, by avoiding large skips or otherwise producing a better general effect?*

N. B. All of the upper parts are not obliged to move contrary to the Bass. Sometimes it is better to have only one part progressing contrary to the Bass.

Fig. 31 illustrates the connection of the triad of C (in its three positions) with that of D.

Fig. 31.



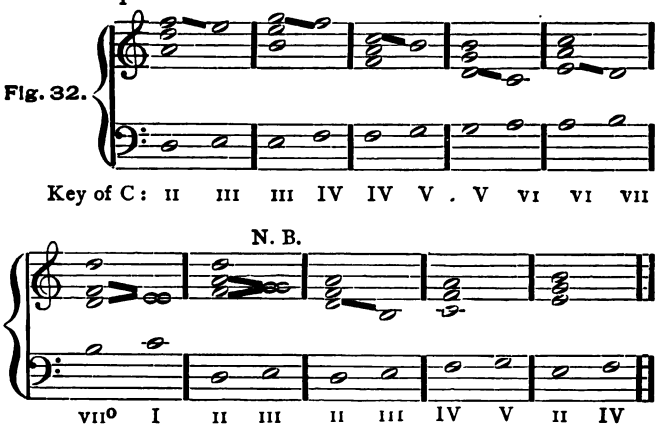
* There are other influences affecting the leading of the parts, which are, however, as yet too advanced for the pupil. After having studied as far as §170, the pupil should review this section.

108. At (*a*) it is necessary to double the Third to avoid Consecutive Fifths with the Bass, which would arise if the Alto should progress to A. Notice also that the Tenor should not progress downward to D at this place, as bad hidden Fifths with the Soprano would result. (See § 134.)

Exercises.

109. Copy the following, and fill up the vacant parts, applying the "mental Process" to each of the ten separate examples.

Fig. 32.



At N. B., Fig. 32, the Third was doubled, as the Leading-note should only under exceptional circumstances be doubled (see §162). The above examples do not sound well unless used in connection with other progressions, when they lose much of their harshness. The teacher should give examples in other keys, and as soon as the class can "figure" inversions (see §§ 125 – 132), this section should be again taken up, using chords in their inversions.

Exercises.

(*a*.) In the key of G, connect the triad upon each

degree with the one upon the degree next above, trying the different positions to make the best effect possible.

(*b.*) Repeat in the keys of B♭, A, and F.

(*c.*) Repeat the above at the keyboard, adding all other Major keys.

Review of the Connection of Triads.

110. (*a.*) Avoid Consecutive Fifths and Octaves.

(*b.*) Contrary motion is the means of avoiding them.

(*c.*) If there is a connecting note, keep it in the same part in both chords.

(*d.*) If there is no note in common, adopt contrary motion and avoid wide skips, especially guarding against consecutive Fifths and Octaves.

(*e.*) In doubling notes, the Fundamental is the best note, the Third the poorest. The Leading-note should be doubled only under exceptional circumstances: though doubling any part is better than open consecutives.

(*f.*) Avoid wide skips. Let each part be melodious.

(*g.*) Avoid progressions of Augmented intervals, as they are not melodious.

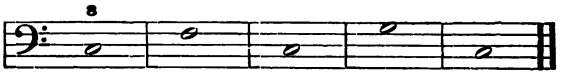
Part-writing.

111. Having learned to connect two given triads, the pupil should proceed to put his knowledge into practical use by writing exercises on given Basses. In these exercises is nothing new; each exercise may be considered as a little series of examples illustrated in § § 102 to 110.

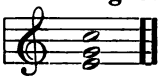
N. B. A figure *over* the *first* Bass note of an exercise, indicates whether the Third, Fifth or Octave of the Bass note is to appear in the Soprano.

Should the pupil need further guidance, the following "mental process," illustrating Fig. 33, will help.

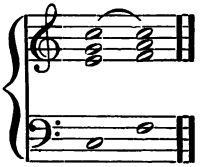
Fig. 33.



112. Process: The Figure 8 over the first note indicates, that we are to begin with the octave (or double octave) of the Root as the highest note, giving the chord in this position:

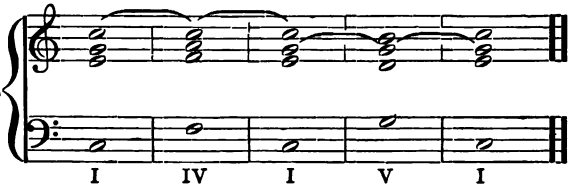


The first problem then is, to connect this chord with the chord founded on F, as indicated by the second Bass note in Fig. 33. Now let the pupil go through the process shown in §103, giving as a result:



The next problem is to connect the chord last found with the chord founded on C, as indicated by the third note in the given bass. Following the same process brings one more chord. Continuing in the same way gives the completed example:

Fig. 34.

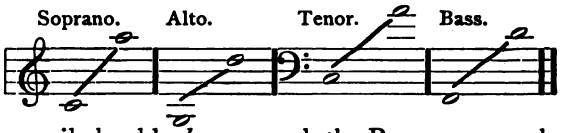


113. In the first exercises the Soprano part is given as well as the Bass, leaving the pupil to find the names of the remaining notes in each chord and to place them so that they will progress as smoothly as possible.

The parts should not cross; for example, the Alto should not go higher than the Soprano or lower than the Tenor. Write the exercises in close harmony.

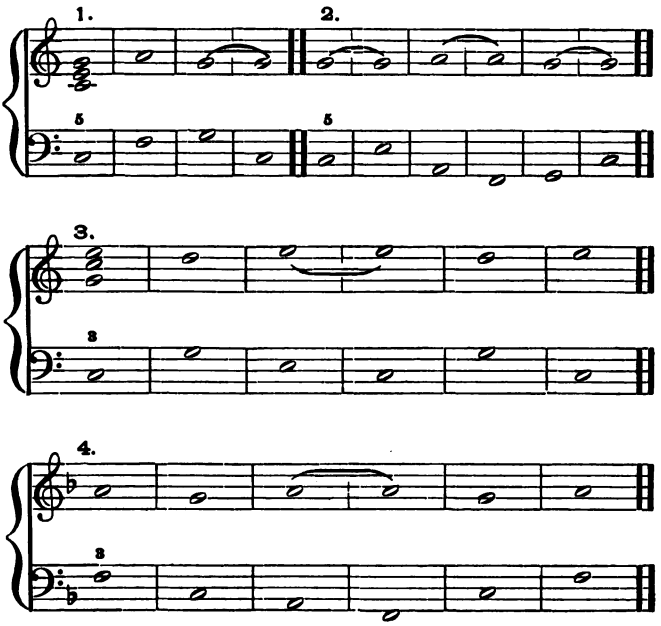
114. The various parts should not exceed the compass of a good voice of corresponding pitch, as shown in Fig 35.

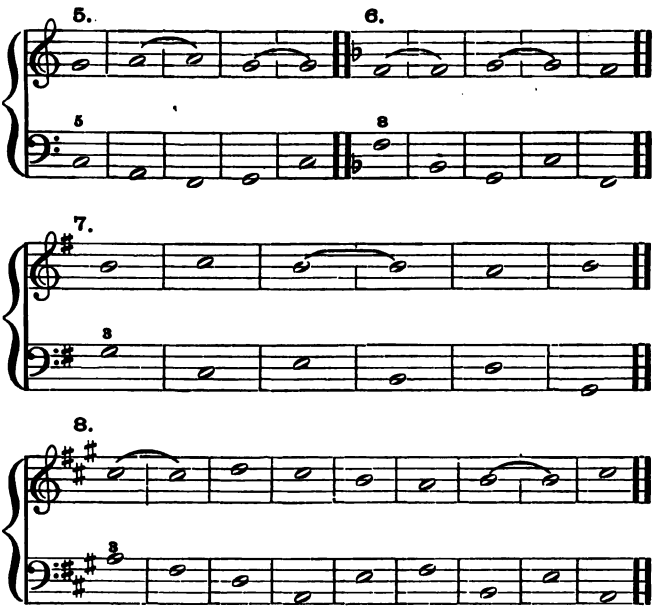
Fig. 35.



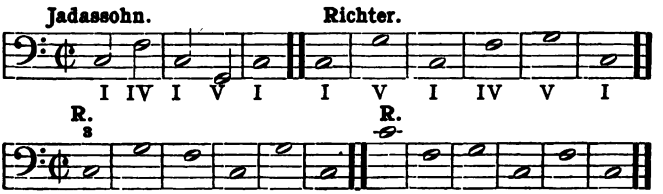
The pupil should *always* mark the Roman numerals in the exercises, as shown in Fig. 34. *Always write them before beginning to form the chords.*

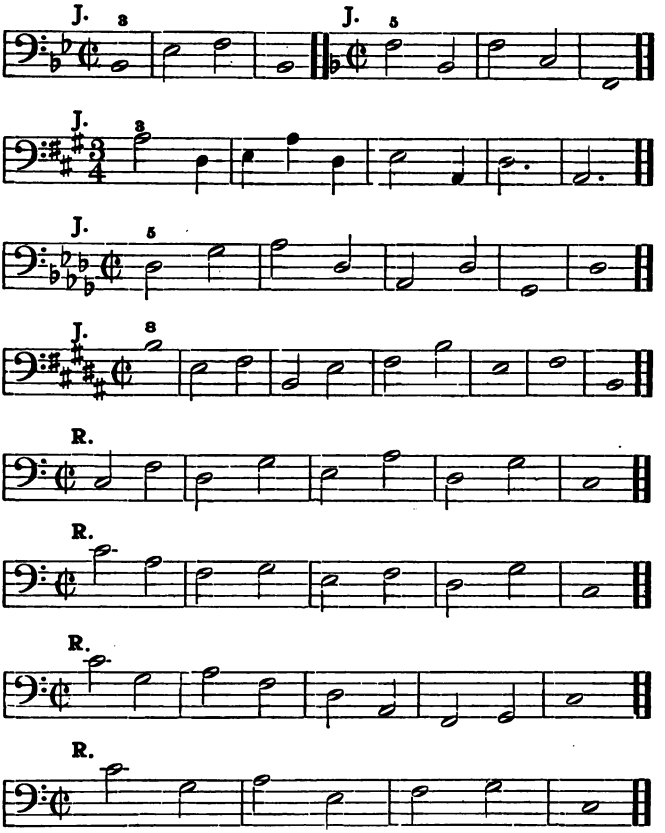
115. **Exercises.**





116. In the following exercises the pupil will write the Soprano as well as the other parts. Where the figure 3 is found over the first Bass note in an exercise, it indicates that the first chord should appear in the position of the 3rd. The figure 5 shows that the position of the 5th is desired. Where no figure is given, the position of the octave is to be written. This applies to the first chord only of each exercise.





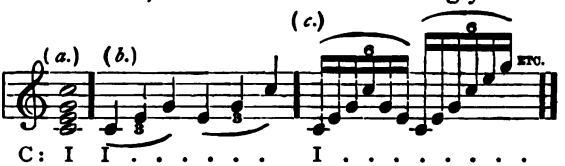
Exercises.

117. The pupil is recommended to repeat the exercises in this chapter, starting with the Soprano in a different position, in order to realize the different treatment required by the changed circumstances. It will be found that some of the exercises cannot be worked out so smoothly in one position as in another; consequently, by

this practice, the judgment will be sharpened to discern the choice in progressions.

118. In cases where this book is used as a preparation for the study of Analysis, or for Piano-students who are unwilling to study Harmony (part-writing) but who desire to thoroughly understand the construction of the chords, the above exercises may be omitted. In their place the pupil may take Sonatinas, Sonatas, etc., mark the key, indicate upon which degree of the scale each triad is found, and its classification (Major, Minor, etc.). He should be taught, that in considering the harmonic structure of a composition, a broken chord is marked the same as one which is not broken. For example, (*a*), (*b*), and (*c*) of Fig. 36 are all considered to be the chord on C, and are marked accordingly.

Fig. 36.



This practice is also recommended to those who take the regular course, as most essential.

Connection of Triads in Minor Keys.

119. In taking up the Triads of the Minor Scale, the principal point for the beginner is to avoid the step of an Augmented Second between the 6th and 7th degrees, where a good connection can be made otherwise. Being a difficult interval to sing, the Augmented Second is not much used in strict writing. For the same reason, all Augmented intervals (in the progression of a single part) are undesirable for the beginner.

Exercises.

120. (*a*) Write the harmonic Minor scale of A;

place the Roman Numerals under the notes; form the triads upon each degree as in § 91.

(*b.*) In the following exercises the Roman Numerals will be used to indicate the triads. Instead of saying "Connect the triad on A (or on the 1st degree) with the triad on D (or the 4th degree), we shall say, "Connect I with IV," the chord mentioned first being written first and connected with the other one.

(1.) Connect I with IV; with V; with VI; with II°.

(2. Connect II° with IV; with VI; with V; with VII°.

(3.) Connect III′ with I; V; VI; VII°.

(4.) Connect IV with I; II°; V; VI.

(5.) Connect V with I; III′; VII°.

(6.) Connect VI with I; II°; III′: IV.

(7.) Connect VII° with I; III′; V.

121. (*c.*) Repeat in the key of C minor: in the key of G minor: in the key of F minor.

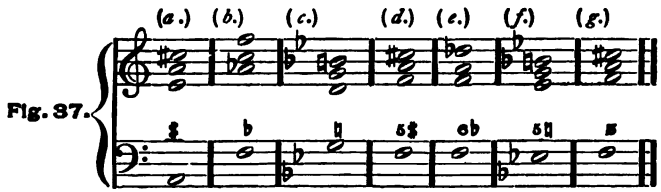
(*d.*) Repeat the above at the keyboard, adding other Minor keys.

122. In § 41 we learned that the 7th degree of the Minor scale must be raised by an accidental to make a Leading-note to the tonic. This Chromatic Alteration must be indicated in the Bass of the exercises in Minor, and is written as follows:

123. When a sharp, natural, or flat appears over a given Bass note, it is intended that the note standing a 3rd above that Bass note is to be made sharp, natural, or flat as indicated by the accidental; e. g., Fig. 37, (*a*), (*b*,)

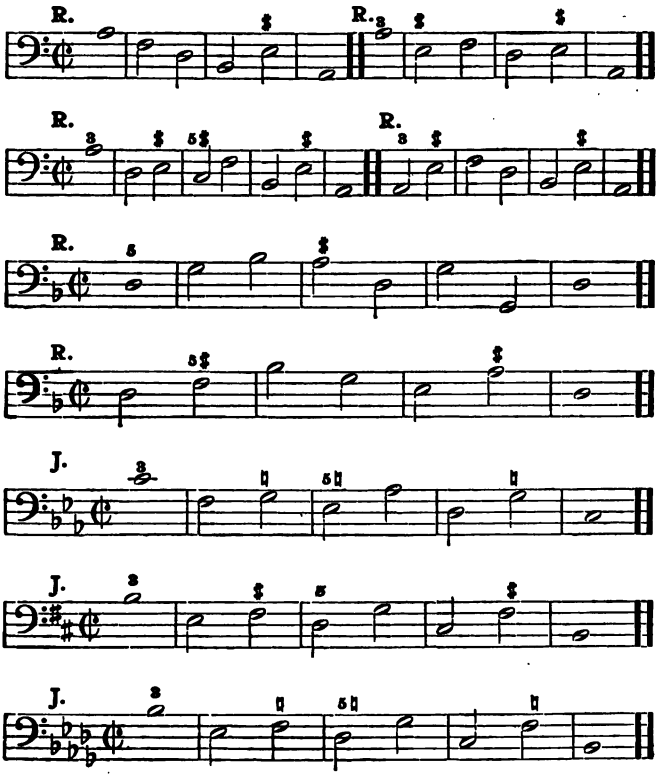
(*c.*) If the 5th above the Bass is to be altered, or any other interval, the figure representing the interval is written with the accidental; e. g., Fig. 37, (*d*), (*e*), (*f*).

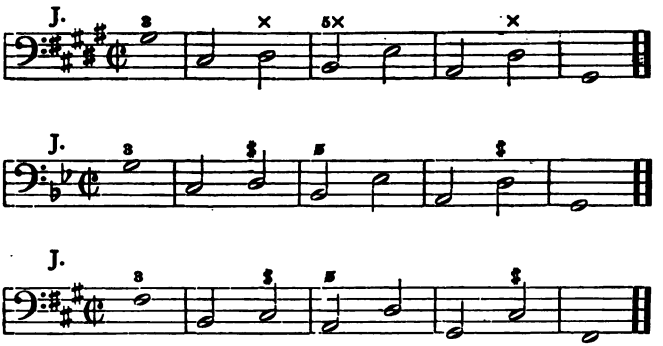
Fig. 37.



A diagonal line through a figure shows that the interval represented by that figure is to be made sharp; e. g., (*g*), Fig. 37.

Exercises.





Synopsis.

124. Form a synopsis of the chapter as usual.

CHAPTER IV.

Inversions of Triads.

125. It is not necessary that the Fundamental note (or root) of a Triad should always occupy the lowest place.* The Third or the Fifth can also occupy that place, and when this occurs, the chord is said to be inverted.

When the Fundamental is lowest, the chord is in its Direct form.

When the Third is lowest, the chord is in its 1st Inversion.

When the Fifth is lowest, the chord is in its 2nd Inversion. (See Fig. 38.)

Notice that "Position" relates to the Soprano or highest part, while "Inversion" relates to the Bass or lowest part.

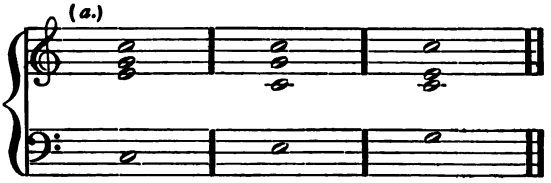
---

* By inversion the Root is not changed, but transferred to a higher part. The root of a chord is the Bass note only when the chord is not inverted.

Keyboard and Written Exercises.

(*a.*) Form various Triads, and show their Inversions, as illustrated in Fig. 38. Avoid doubling the Third.

Fig. 38.



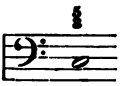
I	I	I
Direct Form.	1st Inversion.	2nd Inversion.

126. (*b.*) Write various Triads in their several Inversions and *Positions*, using two staves. The pupil should not forget that Fig. 38 represents not three different chords, *but three forms of one and the same chord.* We could not say (because E is in the Bass) that the form marked "1st inversion" in Fig. 38 is the triad on E. It is the triad on C in an inverted form. The note C is the fundamental or root from which the chord is derived, which note may be placed lowest or highest. Therefore, in marking the triads, the inversions are to be marked like the direct form (the same Roman numerals), as shown in Fig. 38. The pupil should carefully *distinguish between the actual Bass note, and the root* of the chord. The Bass note changes with each inversion, while the real *root of the chord remains the same for all inversions and positions.*

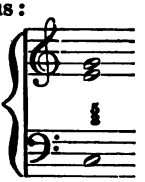
Figuring Triads.

127. In § 56 the pupil learned to recognize intervals according to their distance from a lower note, and to indicate the same by figures. In a similar manner, whole chords can be figured, by indicating the interval

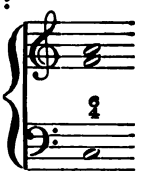
which each note forms with the Bass or lowest note. For example, if we have a note with the figures 5 and 3 over it:



we understand that the interval of a Third from the note C is required, and also the interval of a Fifth, from the same note. Thus:



If we have the same note with the figures 6 and 4 over it, we should form the intervals of a Fourth and a Sixth from that note:



128. These intervals are not necessarily in the same octave as the Bass note, nor in the exact order indicated by the figures, as their arrangement depends upon the progression of the parts in preceding chords.

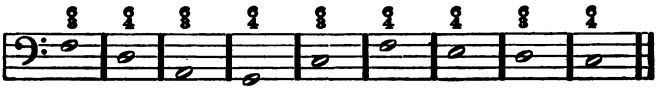
Exercises.

(*a.*) Figure the chords in Fig. 38.

(*b.*) Write the scale of C major, and form a triad upon each degree. Write each triad in its direct form and both inversions, using two staves, and writing in four parts. Figure each chord thus produced.

(*c.*) Write on an upper staff (treble) the chords indicated by the figures over the following Bass notes.

remembering the caution above given in regard to the notes being neither in the same octave as the Bass note, nor in the order expressed by the figures:—



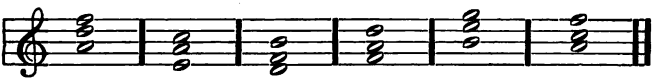
(*d.*) Repeat the above at the keyboard.

To find the Root of an Inverted Triad.

129. A Triad is formed by taking a note and adding its 3rd and 5th (see § 91); and a triad so taken would be figured $\frac{5}{3}$, being in its Direct form. If an inverted triad is taken, the root of which is not known, we can find the root by continuing to invert till the chord can be figured $\frac{5}{3}$, i. e., is in Direct form. When in the Direct form, the root is always the lowest note.

Exercises.

Find the roots of the following chords, and mark each with the proper Roman Numeral:—



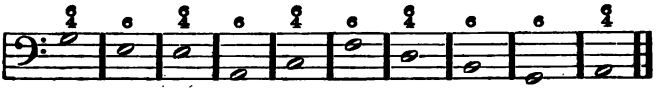
130. Notice that the First Inversion of all the triads is figured $\frac{6}{3}$, and the Second Inversion $\frac{6}{4}$. From this fact a chord in its first inversion is often called a "Chord of the Six-Three," or simply a "Chord of the Sixth"; and its second inversion is called a "Chord of the Six-Four."

Conversely, when a chord is marked $\frac{6}{3}$, we know the Bass note is the Third from the root (in other words, the chord is in its first inversion); when marked $\frac{6}{4}$, the Bass is the Fifth from the root, the chord being in the second inversion.

From this (the last preceding statement) the root of the chord may also be found.

Exercises.

(*a.*) Name the roots of the chords expressed here:



(*b.*) *Play* the chords indicated by the above Bass notes.

131. There are a few conventional rules for Figuring chords, which the pupil must know:—

(*a.*) When no figures are given, the Common Triad is intended.

(*b.*) 6 means the same as $\frac{6}{3}$; a "chord of the Sixth" is the same, therefore, as a "chord of the Six-three."

(*c.*) A sharp, flat, or natural, placed after a figure, is the same as if placed before a note, meaning that the note indicated by the figure is to be made sharp, flat, or natural, as the case may be. If a sharp, flat or natural is given without any figure, the Third from the Bass is intended. A line through a figure, e. g., 8, is the same as a sharp after it.

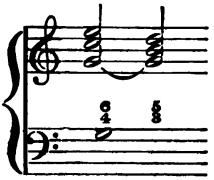
(*d.*) The doubling of the parts, positions, leading of the parts, etc., are not indicated by the figuring.

(*e.*) Oftentimes the figures of a chord are not all given, only the characteristic or most important being written, the others being understood, as at (*b*).

(*f.*) In writing a note indicated by a figure, do not consider the key or signature: simply count the degrees of the staff (beginning with the line or space occupied by the Bass note) just as in § 56.

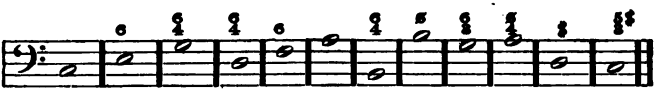
(*g.*) If there are two sets of figures over a given Bass note, it means that the chord represented by the first set of figures is to be followed by the chord represented by the second set while the Bass is held, the time-

value of the Bass note being divided between the two chords; e. g.,



Exercises.

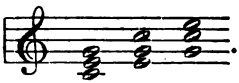
132. (*a.*) Applying the above rules, fill out four-part chords from the following figured Basses, also marking each chord with the proper Roman Numeral. (There is no connection between the successive chords.)



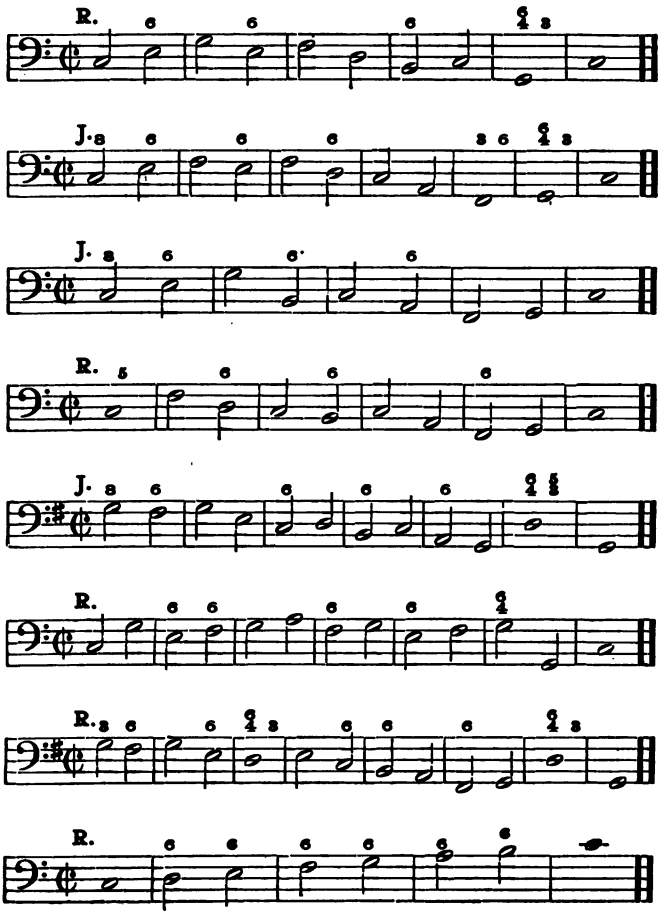
(*b.*) *Play* the chords indicated above.

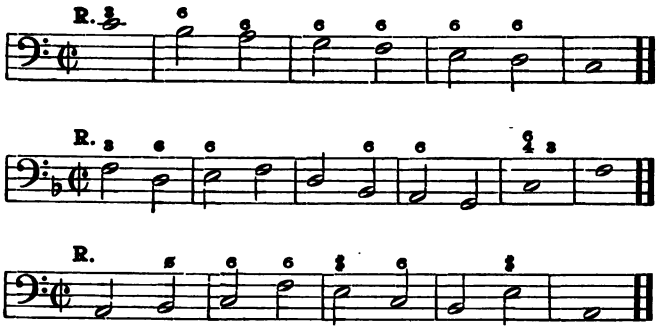
Exercises in Part-writing, Introducing Inversions and Figured Bass.

133. The mental processes described in §§ 103 and 107, should be carefully applied in the following exercises. One question might be added to the process when considering inversions, viz.: "What is the root of the chord, and upon which degree of the scale is it (the root)?" In every case the chord should be marked with the proper Roman Numeral (which must appear as the answer to the above questions) before proceeding with the connection of chords.

N. B. When a chord appears successively in two different positions or inversions, it is obvious that the rule in § 102 (to keep the common notes in the same parts) cannot be obeyed, e. g.,  .

This rule is also occasionally broken in connecting two *different* chords, to secure a good progression of the parts. In general, it will be found that the different rules must yield one to another as circumstances demand. (See §§ 161 et seq.)





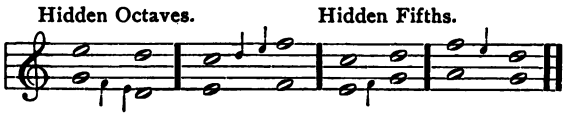
Hidden Octaves and Fifths.

134. Hidden Octaves and Fifths occur when two parts, moving in parallel motion, strike an octave or fifth. If the notes over which they pass should be written out, consecutives would appear. Although not so disagreeable as open consecutives, and not positively forbidden, Hidden Consecutives are better avoided, unless by their use a better progression can be obtained.

The effect of Hidden Octaves or Fifths between the two outer parts is much worse than between the inner parts, or between one inner and one outer part.

Where both parts skip to the Octave or Fifth, the effect is worse than if one moves diatonically to its place. Hidden Octaves and Fifths arising as shown in Fig. 39 are freely permitted.

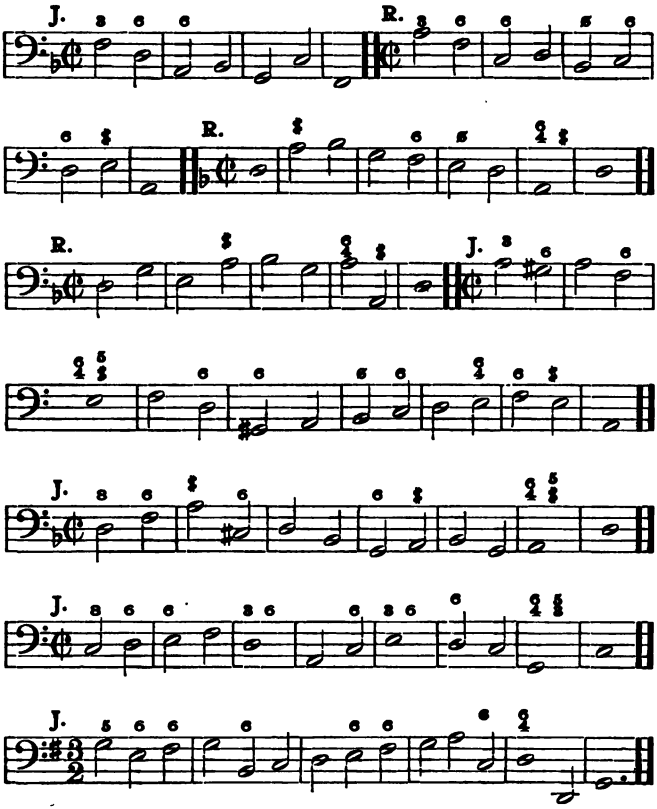
Fig. 39.



The pupil should not attempt to avoid hidden 5ths and 8ves altogether, but should discriminate in regard to the effect, rejecting those that are harsh. Contrary

motion will usually be of assistance in avoiding them, but the pupil should know that an awkward progression of a part is worse than the hidden consecutives, and choose the lesser of two evils.

Exercises.



Harmonizing the Scales.

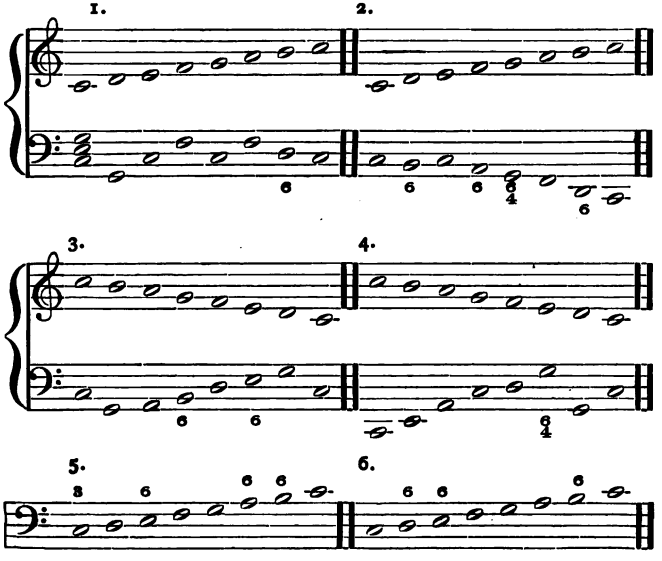
135. An excellent exercise, at every stage of advancement, is the practice of harmonizing the scales in every

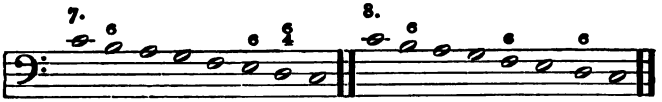
key, and using as many different chords and as much variety as the pupil may have studied at the time. It will be noticed that every note of the scale may belong to three different chords, and either one of these three chords may be used to harmonize that note if a smooth connection with the preceding and following chords can be made.

The scale to be harmonized should be written sometimes in the Bass and sometimes in the Soprano, (see examples below). [For advanced pupils it may also be written in the Alto and Tenor.] When written in the Bass, it should be observed that there can be no common notes to connect two successive chords, unless chords of the 7th are used, for which see later chapters.

Exercises.

(*a.*) Fill out the four parts in the following:—





(*b.*) Harmonize the ascending scale of C in as many ways as possible, using only the triads with their inversions.

(*c.*) Harmonize the descending scale similarly.

(*d.*) Harmonize similarly the ascending and descending scales in all other keys.

(*e.*) *Advanced Course.* Harmonize similarly the Minor scales.

(*f.*) Repeat all of the above at the keyboard.

Synopsis.

136. Write a synopsis of the chapter as at the end of Chapter III.

The Perceptive Faculties.

Continued from page 40.

Triads.

137. After teaching the pupils to recognize two tones sounding together, it is but a step further to recognize three tones. This section is merely a continuation of the foregoing, and may be treated somewhat as follows:—

1st Step. (*a.*) Teacher sounds the note C, and says: "This tone is Doh. Write it in the key of — —" (mentioning any key, not necessarily the key of C).

(*b.*) Teacher sounds E and asks, "What is this tone?"— *Ans. Me.*—"Write it."— Two pupils sing Doh and Me.

(*c.*) Teacher sounds G and asks, "What is this tone?"— *Ans. Soh.*—"Write it."— Third pupil sings Soh. Three pupils sing the three notes together.

(*d.*) While the chord is being sounded, the teacher says, "Remainder of the class sing Me; (sing Soh; sing Doh). Which note is highest? — Which is lowest? — Which between?"

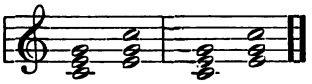
In this way the pupils learn to hear and distinguish the individual notes from the mass of sound, for as soon as they have sung them a few times while the chord is sounding, they will be able to hear the individual tones, and thus recognize the component parts of a chord.

The teacher should not confine himself to the triad on C, but may take any Major triad in the middle of the keyboard or of the voices. The note which is represented by Doh should always be announced, to give a starting-point.

138. *2nd Step.* Having trained the pupils to recognize the notes of the triad by the above and other exercises which his ingenuity or the necessities of the case may suggest, the teacher should proceed to train the pupils to recognize the *different positions of the Triad.*

Process :— (*a.*) Teacher sounds triad C – E – G, and asks, "What are the syllabic names of these tones ?— Which is highest ? — Which lowest ?"

(*b.*) Teacher sounds same triad, but in position of the Octave, repeating the change to make it forcible, as follows:



and asks, " Which note is highest in the last chord ? — Which is lowest ?—Which between ?" Require the pupils to sing the notes one by one, using the syllabic names, while the chord is sounding. Also ask them to fix their attention strongly on one individual note in the chord, while the teacher plays the chord, and try to hear it, i. e., to individualize the note from the chord, and thus cultivate the perceptions.

In the same manner the remaining positions should be taught.

139. *3rd Step. Chords of four tones.*

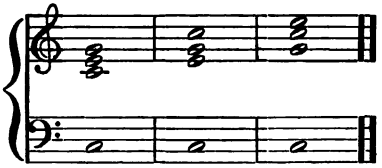
(*a.*) Let three pupils sing the triad C – E – G. Teacher sounds C (3rd space, treble) and asks, " What is this note ?"— *Ans.* Doh.— " Which Doh ?"— *Ans.* Octave above the first Doh.— Fourth pupil sings upper Doh. Four pupils sing, forming the chord, while remainder of class sing single tones as before. Teacher asks, " Which note is highest ? — Which is lowest ?— Which is intermediate ?— Which note is doubled ?"

NOTE. The piano may be used to produce the chord, but it is far preferable to have it sung.

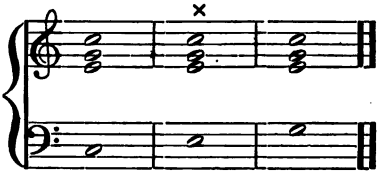
Proceed as above with other two positions.

140. *4th Step. Inversions.*

Play the following, asking questions as before, concerning the highest and lowest notes, etc.:

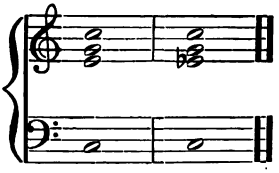


Then play the passage next given, calling attention to the movement of the bass, and to the different musical effects of the different inversions, wrong doubling at ×, etc. Repeat with other Major chords, asking questions as above.



141. *5th Step. Minor Triads.*

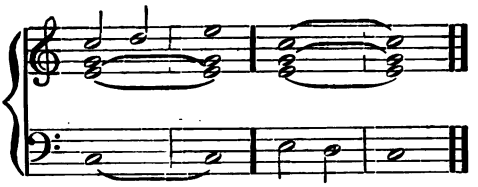
Play:



calling attention to the different effect of the Minor, showing how it differs from the Major, asking questions as above, etc. Take in succession the Minor triads of the key of C (also other keys), and question in regard to highest and lowest notes, etc.

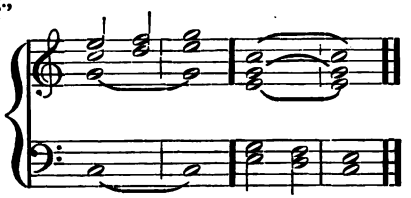
142. *6th Step. Progression of a part.*

Play little progressions where a single part moves, requiring the class to recognize which part moves and what the progression is. (The answers should be in syllabic names, and the notes written as recognized.) To illustrate, play:



Process: — First name the notes in the first chord; ascertain the position and inversion, and write the notes. Then study the progression.

Next take up examples where two parts move without change of chord; e. g.,



Lack of space prohibits the multiplication of these simple examples, which can be taken from many sources or invented by the teacher. Many examples should be studied before proceeding.

143. *7th Step. Progression of parts with change of chords.*

(*a.*) *Without Inversions.* Give some examples, if necessary selecting from the first exercises in part-writing (§ 113, etc.), calling especial attention to the progression of the Bass; for if that can be ascertained, the fundamental of each chord is clear, and with it the chord itself, though the position may remain in doubt. (The position will be discovered by requiring the pupils to sing the notes of the chord, using the syllabic names.)

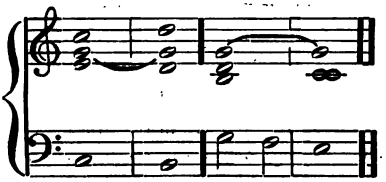
Notice also the progression of the Soprano, whether up or down.

The first exercises should consist of but two chords — one progression, — and should illustrate the progression from the Tonic to the Dominant or Sub-dominant, after which the progression from the Tonic to the remaining degrees of the scale may be studied, and later exercises may be extended to take in several progressions. It is of especial importance that the exercises be carefully written.

144. (*b.*) *Progressions with Inversions.*

This is more difficult than the preceding, and requires patience on the part of both teacher and pupil. At first give chords, the nat-

ural progression of which can be easily traced, as for example those given here. Those progressions are best which have some tied notes.



as the attention can be concentrated on one or two moving parts. Simple, well-known harmonies only should be used, leaving the more difficult ones till a later period. The teacher should constantly lead and direct the perceptions by questions as illustrated above. Each step should be expressed in notes.

145. It will be advantageous at this point for the pupil to refer to the exercises he has already written, and try to think, from looking at the progressions, how they would sound. Indeed, he should never look at a chord without trying to realize its effect.

NOTE. The treatment of the Perceptive faculties is here given, not as a complete exposition of the subject, but merely as a suggestive outline, to be expanded and adapted by the teacher to the needs of individual cases.

Transposition.

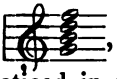
146. The pupil will gain a practical idea of Transposition through the exercises used in developing the perceptive faculties, if the teacher will vary the keys in which the pupil writes what he hears. For example, the teacher may say when beginning an exercise, "This tone is Doh" (striking some note); "write in the key of G." After a few moments he may say, *without changing the pitch of Doh*, "Write in the key of *F*"; and the pupils will soon find that they can as well express the relations of the notes to each other in one key as in another.

CHAPTER V.

CHORD OF 4 NOTES: THE CHORD OF THE SEVENTH.

Its Construction.

147. As stated in § 90, the whole system of chords is a process of building, or adding upper notes to some note considered as a Root (Foundation, or Fundamental). The various triads were formed by adding a 3rd and a 5th to such a Root-note. If we add not only the 3rd and the 5th, but also the interval of a 7th to the Root-note or Fundamental, we shall have a *Chord of the Seventh.*

To illustrate, represents the Root G with its 3rd and 5th forming a triad. If the interval of a 7th (from G) is also added, we have  , called a Chord of the Seventh. (It may be noticed in reference to this building-process, that each note is at the interval of a 3rd — either Major or Minor — from the note next below. In the second volume it will be seen that this same rule of placing the successive notes a 3rd apart is followed in forming chords of the Ninth; also in what are called, by some theorists, the chords of the Eleventh and the Thirteenth.)

Exercises.

148. (*a.*) Write chords of the 7th upon every note of the Major scales of C, G, F, and D.

(*b.*) Write chords of the 7th upon every note of the Minor scales of A, E, D, and B.

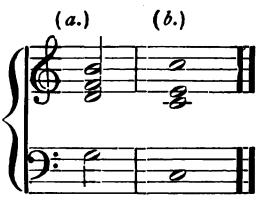
149. The pupil, while writing the above, should notice the following:—

(1.) That some of the chords, particularly in the Minor keys, sound so badly that they could not be used.

(2.) That the chord of the 7th formed upon the 5th degree, the Dominant, *is alike in Major and Minor*, and is not only the most agreeable one, but is the only one having a Major 3rd and Minor 7th.

(3.) That none of the chords of the 7th are satisfactory to rest upon, but, like the Augmented and Diminished intervals and triads, seem to require something to come after them to create a feeling of repose.

Fig. 41.



For example, the chord (*a*), in Fig. 41, although it sounds well, is evidently not satisfactory to dwell upon, or to use as the final chord of a composition, as it seems to suggest something which should follow to make it complete. Notice that the chord marked (*b*) gives this sense of completeness and repose.

150. This leads us to consider that all chords may be divided, with respect to this quality (repose or the lack of it), into two kinds: *Independent chords*, or those which are satisfactory to pause upon; and *Dependent chords*, or those which demand that some chord should follow to establish repose. This classification corre-

sponds with the division of intervals into Consonant and Dissonant (see § 75), for those chords containing *consonant intervals exclusively* are *Independent*, while those containing *even one dissonant interval* are *Dependent* chords.

151. This lemand on the part of a Dependent chord to be followed by something reposeful, is satisfied if a consonant chord succeeds it. The process of passing from a Dependent chord to one that is consonant (Independent) is called "*resolving*" it, and the chord to which it progresses is called the "*chord of resolution.*"

It is necessary to resolve dissonances, not only because they are unsatisfactory to rest upon, but also because there are *tendencies on the part of certain intervals contained in them, and of certain notes of the scale, to progress in definite directions.*

The complete analysis of these tendencies and of the chords of the 7th is reserved for Vol. II, as the subject is rather an intricate one for the young student. For the present we will study only the chord of the Dominant 7th, which was noticed in § 149 as being the most agreeable one, and alike in Major and Minor keys. The pupil should very carefully note the following:—

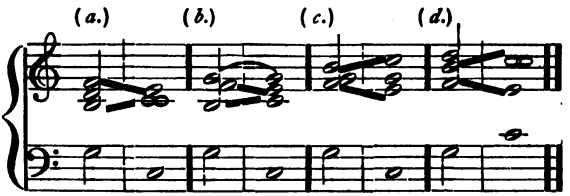
152. As the Dominant is on the fifth degree of the scale, to construct the chord of the Dominant 7th in any key we erect the chord on the fifth degree of that scale.

(2.) As shown in Fig. 41, the best chord to follow the chord of the Dominant 7th, or to be the chord of resolution, is the chord upon the Tonic (first degree) of the key. This chord gives the most perfect feeling of rest when it is reached.

(3.) The chord of the Dominant 7th may be

written in all of its different positions, the chord of resolution appearing in different positions also, to meet the requirements of the part-leading. This is shown in Fig. 42.

Fig. 42.



(4.) In resolving the chord of the Dominant 7th, the seventh degree of the scale should progress *upward* to its note in the Tonic chord, and the fourth degree of the scale should progress *downward* to its note in the Tonic chord. The reason for this rule will be given in Part II. These progressions are shown by the heavy lines in Fig. 42.

(5.) In resolving the chords of the Dominant 7th, let the various notes proceed to the *nearest* notes in the next chord, (as in connecting triads) not forgetting, however, that the progressions of the fourth and seventh degrees are to be considered first.

Exercises.

153. (*a.*) Write the chord of the Dominant 7th in the key of C and resolve it to the Tonic triad. When completed compare with (*a*), Fig. 42.

(*b.*) Write the same in all positions, and resolve. When completed compare with Fig. 42. (Note that in Fig. 42, *b*, the 5th of the Dominant chord is omitted.)

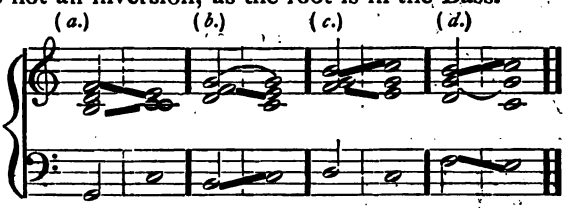
(*c.*) Write the chords of the Dominant 7th in all positions in all keys, and resolve them to their major Tonic triads.

(*d.*) Resolve the above to their *minor* Tonic triads.

Inversions of Chords of the Seventh.

154. The inversions of chords of the 7th are similar to those of triads. When, instead of the root, some other note of the chord is in the Bass, or lowest part, the chord is said to be inverted. The various inversions are shown in Fig. 43. N. B. The one marked 'Direct form' is not an inversion, as the root is in the Bass.

Fig. 43.



Direct form. First inversion. Second inversion. Third inversion.

In the following exercises do not double the third of any chord.

155. **Exercises.**

(1.) Write the chord of the seventh upon each degree of the scale of C, and place each one in all the inversions, as shown in Fig. 43. Do not double the third.

(2.) Write the chordof the Dominant 7th in the key of C in all its inversions, and resolve them to the Tonic Triad, as shown in Fig. 43. The notes upon the fourth and seventh degrees of the scale are to progress as directed in § 152, and the Tonic triad will sometimes appear in an inverted form, following the leading of the parts, as shown in Fig. 43, *d.*

A fuller exposition of the chords of the 7th is given in Volume II of this work.

END OF VOLUME I.

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